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ABSTRACT

The purpose of this study was to evaluate both the written Department of Motor Vehicles (DMV) driver licensing test, and a large sample of driver knowledge test items selected from the University of Michigan's Highway Safety Research Institute (HSRI) item pool. Test forms were administered to 48,000 California drivers license applicants. The variables analyzed were subject's sex, age, education, annual mileage, and prior six year driving record in relationship to test form and item scores. New test forms were created and were compared to DMV forms. For each test form, the highest test score correlation obtained was with applicant's education, although education had no relationship to accidents or convictions. For all DMV test forms combined, correlations of total scores with driving record variables were all significant, indicating renewal applicants with better prior driving records obtained higher test scores. Original drivers license applicants scored lower than renewal applicants. HSRI items and test forms were more related to applicant's biographical variables than were DMV items and test forms. Forms created with HSRI items from the initial HSRI item pool screening were less related to driving record than DMV forms. Final forms, created with items that were the most accident related, were no more or less related to driving record than DMV forms. A summary is appended. (Author/BC)

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AN EVALUATION OF THE CALIFORNIA DRIVER KNOWLEDGE TEST AND THE UNIVERSITY OF MICHIGAN ITEM POOL

David W. Carpenter
California Department of Motor Vehicles

APRIL 1975

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Research and Statistics Section
Ronald S. Coppin, Chief
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16. Abstract

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For each test form, the highest test score correlation obtained was with applicant's education, although education had no relationship to accidents or convictions. For all DMV test forms combined, correlations of total scores with driving record variables were all significant, indicating renewal applicants with better prior driving records obtained higher test scores. Original drivers license applicants scored lower than renewal applicants.

HSRI items and test forms were more related to applicant's biographical variables than were DMV items and test forms. Forms created with HSRI items from the initial HSRI item pool screening were less related to driving record than DMV forms. Final forms, created with items that were the most accident related, were no more or less related to driving record than DMV forms.

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The opinions, findings, and conclusions expressed in this publication are those of the author and not necessarily those of the Federal Highway Administration or the State of California. This report does not constitute a standard, specification or regulation.

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INTRODUCTION

This section is divided into two parts; first a statement of the purpose of this study, and second a literature review of articles pertaining to driver knowledge testing.

Since 1927 the California Department of Motor Vehicles (DMV) has required that all drivers license applicants pass a written knowledge test of the rules governing motor vehicle operation. This is done to ensure that all licensed California drivers have an acceptable level of knowledge of the laws and regulations in the California Vehicle Code. At present, all California drivers licenses must be periodically renewed, and written testing of driver knowledge is also one part of this license renewal process. All licensed California drivers are thereby kept current in their knowledge of traffic laws and safe driving practices, and are given an opportunity to increase their knowledge of laws and safe driving facts. A summary of the California Vehicle Code, titled "The California Driver's Handbook," is available for all drivers license applicants.

California's current written test of driver knowledge appears to measure knowledge that drivers need to operate a motor vehicle safely. It is a test with face validity. The long range intent of drivers licensing is to grant permission to operate a motor vehicle to those who have the ability to do so safely and in a manner consistent with the state of California's legal codes. This suggests several more purposes a written drivers test might have beyond testing drivers' knowledge of traffic laws and current safe driving practices.

A written test of driver knowledge can serve as an educational experience and constitute a traffic safety treatment. Another possible function of a written test of driver knowledge is for it to be a predictor of future safe driving performance. A written drivers test might also be used to diagnose specific weaknesses and problem areas in driving.

Purpose

This study was conducted to analyze a large sample of the 1,300 test items in the passenger car item pool created at the University of Michigan's Highway Safety Research Institute (HSRI), as described by Pollock & McDole (1973). A more detailed description of this item pool is presented in the literature review. Unlike DMV items, this HSRI item pool was based on a task analysis and appeared to be a promising source of new accident related content for DMV tests. Data was gathered for DMV tests, both to determine the adequacy of DMV test forms and to provide for comparisons between HSRI and DMV items. It was considered of value to analyze whether test or item scores, and driving record variables were related to several background characteristics of applicants. Sex, age, education, and annual mileage data was collected from all applicants tested.

Following the initial item screening, a smaller set of the "best" items were selected to create final test forms that will be used in a future testing experiment. Complete validation data is presented for all HSRI and DMV items used in this study.

Literature Review

This literature review presents studies that have analyzed procedures and purposes of driver knowledge testing. The first studies presented are those that analyzed the feasibility of waiving written tests for certain California drivers. Next, studies are presented that varied the methods or means of testing to obtain educational benefits. Test validation studies are presented next, and are followed by earlier literature reviews and discussions concerned with written tests of driver knowledge. The last studies presented are those that dealt with the subject matter of driver knowledge tests, and sought to create a more complete body of test items.

Waiving Written Tests

While many states are currently implementing more extensive law testing programs for renewal applicants, California has sought to analyze the need for extensive driver knowledge testing for the general driving public. The following studies analyzed the feasibility of waiving the written knowledge tests, or of waiving the complete renewal process.

The feasibility of waiving the written test for drivers license renewal applicants was examined in two experiments (California DMV, 1971). The first experiment was limited to 15,000 renewal applicants whose DMV driving record was free of both accidents and convictions during the three preceding years. Records of all traffic accidents involving over $200 damage, and legal convictions for non-parking California Vehicle Code violations were on file at DMV. Two months prior to the expiration of their current drivers licenses, one of the experimental groups was sent letters congratulating them on their good driving records. It informed them that their written test would be waived upon presentation of this letter. A control group was not contacted at all, and renewed their licenses normally. No statistically significant differences were noted between the six months subsequent driving records of the experimental and control groups. Because the waiver program was more costly, no change was recommended in the testing procedures.

The second experiment was conducted with 5,700 renewal applicants not selected by prior driving record. Renewal applicants were randomly assigned to either an experimental group who had their written tests waived, or to a control group that took written tests as usual. The random assignment was made when the applicants appeared at a DMV field office, with assignment made to the experimental or control group on the basis of the last digit of the drivers license number. There were no statistically significant differences between the groups in accident record in the six months following the experiment. One limitation of the study was that applicants came prepared to take a written knowledge test. The recommendation made was to keep the written test, because it motivates periodic study of the California Driver's Handbook and, therefore, might have some benefit that was not measured by the experiment.

Another study has more fully analyzed the reward value of waiving the complete renewal process under certain conditions for certain driver classifications (California DMV, 1974). The experiment was conducted in two parts; the Reward Program and the Incentive Program. The Reward Program was conducted with 25,000 drivers who had no convictions or accidents during the previous year. A letter was sent to drivers selected for participation in the Reward Program, notifying them that a 12 month license extension would be issued as a reward for their clean record accomplishment. They were also told that a second one year extension would be granted for another one year clean record. The results indicated no reliable influence on subsequent traffic convictions, and various detrimental effects on subsequent accidents compared to uncontacted controls.

The Incentive Program was conducted with 25,000 drivers having one or more prior driving record entries during the prior year. These drivers were sent a letter describing their eligibility for a 12 month license extension which would be granted provided their records remained free of accidents and convictions over the subsequent year. The results of this Incentive Program indicated no significant effects on subsequent convictions, but various beneficial effects on subsequent accidents compared to controls. Incentive Program effects were further influenced by the drivers' age and sex. Both Incentive and Reward Program effects were influenced by subjects' prior driving record. The good driver population was not deemed to be a viable candidate for the Reward Program, but positive Incentive Program effects found on accidents were thought to have important implications for the design of future driver improvement programs.

In short, no definitive statements can be made about benefits to safe driving from testing the driving knowledge of licensed drivers. The evidence from the preceding studies suggests that drivers with clean driving records may have their written licensing tests waived with no negative consequences. But, waiving the entire renewal process as a safe driving reward did have negative consequences on subsequent accidents.

Open Book or Home Completion Written Tests

The driver knowledge testing process can have as a goal, both testing of driver knowledge and providing for an educational experience. The following studies compared different testing methods, including open versus closed book and home versus DMV field office completion of driver knowledge tests, to determine if there were educational benefits.

In 1968 the California DMV conducted an Open-Book Testing Program. The idea behind the program was that the written knowledge examination could be used as a means of teaching drivers, as well as testing them. The method used was to permit all drivers license applicants to refer to their copy of the California Driver's Handbook when they did not know the answer to a question. Fifty questions were asked, and all had to be answered correctly for a passing credit on the examination. Applicants missing five or fewer questions were permitted one opportunity to correct these during that test trial. A total of 24,000 drivers were tested, but there was no subsequent evaluation of any educational benefits derived from the program. Several operational problems were encountered because of the fact that to receive passing credit, all questions had to be answered correctly. Applicants required an extremely long time to complete the test, and more applicants failed. Field office congestion thereby resulted and the program was discontinued. But much valuable feedback was gained about ambiguities and vagueness in the vehicle code summary and in the test questions themselves.

Fruchter (1970) analyzed the feasibility of open-book testing, and of providing for home completion of written knowledge tests on a sample of 7,000 Texas DMV drivers license renewal applicants. The Texas DMV did not, at that time, require a written knowledge test for renewal applicants. Scores on the home completion tests averaged slightly higher than an open-book office test, which in turn, averaged slightly higher than scores on a closed-book office test. It was found that an effective means of improving scores was to warn applicants of further testing. It was concluded that a feasible method would be to mail the vehicle code summary with an 80-item test for home completion to the subjects, followed by a short office test covering the same material. Further operational findings were that a closed-book office renewal test would more than double, and an open-book office renewal test would at least triple the time each applicant would spend in the drivers license office when no renewal test was given.

The experience from these studies was that open-book testing substantially increased the amount of time license applicants spent in a DMV field office compared to closed-book office testing. Such a testing approach might have educational benefits, but no systematic evaluation has been made to date in the field of drivers licensing. The license renewal process used by the California DMV includes updating all drivers licenses with a new driver photograph and current address. This is necessary to keep the drivers license a valid identification card. Providing for home completion of the written knowledge tests may serve to reduce the amount of field office time spent, but can not eliminate the need for periodic license renewal if the drivers license is to remain a primary identification card. No systematic evaluation has yet been made of educational benefits from home versus field office test completion. Home completion of written tests may result in money savings due to lesser demands placed on field office personnel.

Automated Testing

Modern technology has made it possible to test applicants' knowledge of laws and safe driving procedures using photographs of actual driving scenes, and provide for immediate feedback of the appropriate response. Such approaches are usually automated, and they have several advantages over traditional written paper and pencil testing. With a written test, a disadvantage is that the correct answer can sometimes be recognized by its form rather than by its content. Written tests can probably be passed with nothing more than rote memory of the vehicle code summary. But an automated approach presents an applicant with a driving scene, and tests his ability to examine the scene, discover those elements necessary to make a proper decision, and further tests his ability to understand the rules as they apply to that situation. But applicants must often still respond in some verbal mode.

Many wrong answers lack plausibility when they follow a written stem. They do not "look" like appropriate sentence completions. With a photograph or motion picture of a driving scene, much of the written information is not needed, so an automated test may be less dependent on the verbal skills of the applicant.

Automated testing can be designed to provide immediate feedback. The applicant is immediately told whether his answer is correct, why or why not, and why the correct answer is the best answer. With a conventional written test, applicants do not have to review and analyze their corrected and scored test. If an applicant does review his test after it has been scored by an examiner, enough time may have elapsed so that he may not remember why a particular answer was chosen. With immediate feedback, an applicant can consider the correct answer while his reasoning and decision making schemes are still fresh in his memory. An additional advantage of immediate feedback is that positive reinforcement is given for the correct answers. The following studies have analyzed the benefits of presenting tests of laws and safe driving principles with automated testing equipment.

Purswell (1970) analyzed the Oklahoma DMV written test and a new audio-visual test that was machine administered to 1,000 license applicants in Oklahoma. The equipment used in the machine administered test was the Automated Driver Improvement and Testing system (ADIT). This system had two slide projectors which projected photographs of a driving scene together with a corresponding multiple choice question. The test was given in a group setting, and all subjects in the group saw a driving scene and a related question at the same time. Each subject had his own responder with four response buttons to indicate his answer choice. Each question had to be answered in a set period of time for credit to be given. Group starts and finishes were not necessary, because a subject could enter the test at any point, and when he completed a pre-set number of questions, his responder illuminated to indicate the end of the test. The final score was machine calculated at an examiner's console.

Subjects were given either the written test or the new machine test, and a group of volunteering subjects returned a month later for retesting. Those volunteers who initially took the ADIT machine test were retested with the same test on the ADIT equipment and showed no significant difference in test scores. Those who took the written test were retested with the written test and also showed no positive or negative test score differences. Written and machine test groups had no significant differences in subsequent six month driving records. Because the written test and the new machine test were different tests and contained different test items, no conclusions can be drawn about whether an audio-visual or written test mode produces superior learning.

Paulsrude (1970) analyzed a new 25-item test that was administered on the ADIT equipment to 262 Washington State license applicants. An internal consistency approach was used to select the 25 items from the Washington State written tests. Younger applicants were found to score higher than older applicants, and the new test administered on ADIT equipment was found to be more difficult than the old written test.

A large scale study of the feasibility of using a programmed learning audio-visual testing approach for the driving knowledge test was conducted by the Washington DMV in 1971. Operational problems were encountered, but the demonstration project provided much valuable data for the design of an automated licensing system. A test was constructed with 25 driving scenes and specific related questions. Two types of equipment were used for presenting this test: one designed for group testing and one for individual testing. The individual testing equipment was a unit with a small viewing screen and answer selection buttons. Each applicant was assigned to his own unit, and started the test by depressing a start test button. A driving situation was presented with a question or statement, and four answer choices offered. Applicants had an opportunity to change answers before entering a final answer, and immediately were presented with the correct answer after they indicated their final choice. Final scores were calculated at an examiner's console. The group testing equipment required group starts and finishes which created operational problems. After all applicants were seated, a slide of a driving scene was presented on one screen and a question on another. When all applicants selected an answer, a taped narration stated the correct answer and explained why that choice was correct. Final scores were made available at an examiner's counter.

The individual knowledge test was administered to a sample of poor drivers, involved in a driver improvement program, and a sample of good drivers renewing their drivers licenses. The results indicated 21 out of the 25 items were significant discriminators between good and poor record drivers, but 11 were negatively related to driver performance class. Poor record drivers had higher average scores than good record drivers.

The University of Iowa (Sabers & Berry, 1971) conducted a more extensive validation study of the state of Iowa's automated testing project (DRIVO-TEST) to determine if it was superior to Iowa's written knowledge test. The DRIVO-TEST was intended to be a more valid representation of important concepts involved in the driving tasks presented via electro-mechanical means. When an applicant was to be tested by the automated DRIVO-TEST, he was assigned to an individual station with a closed circuit TV monitor and a responder. When he was ready to begin the test, he pressed a button to activate the set and then watched as driving situations were presented on the TV screen. When a test exercise was presented, the action on the screen stopped and the question was printed for viewing by the applicant, and read by the narrator. The applicant was told when to respond, and was given ten seconds to push a button on the responder which indicated his answer. He was then told the correct answer and the rationale for the choice. An applicant answered a pre-set number of questions, and was then given the final score.

To experimentally analyze the educational effectiveness of the written versus the automated test, two 23-item test forms were created that were composed of items testing concepts considered to be important to safe driving. An eight group experimental design was used, where test form, written or automated pre-test, and written or automated post-test, was varied. The results indicated that the automated pre-test produced greater increments in learning than did the written pre-tests, with either a written or automated post-test. Because the questions in the written tests were the same as those in the automated tests, the learning is attributed to visual perception and/or the advantage of immediate feedback. Further studies were planned to determine the validity of the automated approach using an external, driver performance criteria. Public response to the DRIVO-TEST was favorable.

The Louisiana Department of Public Safety (1974) has developed a new format for its drivers handbook and written test that provides visual perception of driving scenes. The handbook consists of color photographs of 54 traffic situations, with descriptions of the situations and questions based upon the situations. The answers to the questions are printed in the back of the booklet. The reader is forewarned that 20 of the identical scenes and questions will comprise his written examination. Other states have also developed handbooks and tests utilizing photographs of traffic situations.

The Columbia Broadcasting System (1969) prepared a national drivers test showing motion pictures of driving scenes which was seen by tens of millions of drivers on TV. The types of questions used in this test could be used in drivers licensing. Sequential photos of a driving scene were used in the printed version of the test.

In summary, it appears that an automated testing program, that provides quick feedback and "real" driving scenes, is a more educational testing approach. But no study has demonstrated that this approach results in significant accident reductions or is capable of presenting a test that is more highly related to driving record.

Written Test Validation Studies

The process of test validation has a goal determining if a test measures what it purports to measure. A test is not valid in and of itself, but is valid only with respect to its particular use. The following studies analyzed the validity of the written tests used for drivers licensing in several states. Initially, studies are presented that sought to determine whether written tests are valid for distinguishing between safe or unsafe drivers, with driving record a validation criteria. These are followed by studies that used a criterion of driving safety other than driving record. Finally studies are presented that analyzed test validity for purposes other than distinguishing between safe or unsafe drivers.

The Eno Foundation for Highway Traffic Control (1948) studied the relationship between driving record and driver knowledge with 386 drivers, half accident-free and half accident-repeaters. Drivers were gathered from Michigan and Connecticut, and the accident-repeater and accident-free groups were matched on a number of variables. The subjects were administered a specially constructed written test of safe driving practices, as well as the DMV written knowledge test for their respective states. The accident-free drivers were significantly superior to the repeaters in their knowledge of traffic laws and safe driving practices.

Kaestner (1964) analyzed the relationship between driver examination records and subsequent five year driving records for 13,000 drivers who held valid Oregon State drivers licenses at the beginning of 1962. Drivers were classified by sex, and further by whether they failed the written and drive tests before they finally were issued a license. The following are the written knowledge test results obtained from that study. Male licensees who failed law tests one or more times were significantly less likely to drive five years without accidents or convictions than those who never failed the law tests. But prior failure experience on the law tests was not significantly related to accidents and convictions for female licensees. Passing scores of male licensees on the law tests were not significantly related to subsequent accidents or convictions. Females with high passing scores were significantly more likely to drive five years without accidents than those females with low passing scores. The author concluded that there were some consistent sex differences, and that the relationship between performance on drivers licensing exams and subsequent driving record is complex.

McRae (1968) analyzed written and drive test scores with respect to driving record. Subjects were 1,300 North Carolina drivers who were licensed between June 1964 and May 1965, and were 16 to 20 years old. Subjects were classified into three groups based on their driving record for the two years subsequent to licensing. The clean record group had neither accidents nor convictions. The minor violation group had only one or two minor violations on record and the accident group had either two responsible accidents or one responsible accident and one major violation. The accident group did significantly worse than the other two groups on the signs and rules written tests. There were no significant differences in written test scores between the clean record and minor violation groups. An analysis by form of the written rules test indicated form differences, and a post hoc comparison indicated significant differences in form difficulty.

Wallace & Crancer (1969) conducted two studies with licensed Washington State drivers. The first study correlated the written knowledge test scores of 235 drivers with their subsequent four year driving record. Two measures of driving record were used. The first was an assignment to five categories based on differing degrees of chargeable and non-chargeable accidents and citations, and the second measure was total state of Washington violation points. The tests demonstrated no predictive validity. All correlations were in the wrong direction, meaning those applicants with high written test scores had worse driving records. In the second study, a 40-item written test was constructed and administered to 246 problem drivers as part of their driver improvement interview and to 533 drivers who had no citations in the past six years. No significant differences were observed in total score means for the two groups. Item correlations with driving record varied randomly around the zero point. It was concluded that use of the total test scores for screening applicants was not defensible.

Freeberg (1970) developed a systematic five phase plan of study for the development of an improved DMV written test for North Carolina. Results of the first phase were presented in Freeberg & Creech (1971). The purpose of that phase was to evaluate the written licensing exams that were then in use in North Carolina. Twenty-one thousand original applicants took the initial licensing rules tests and 8,000 renewal applicants took the renewal rules tests. Results indicated internal consistency reliability of about .75 for the 30-item initial licensing test forms and about .65 for the 25-item renewal forms. Factor analysis failed to reveal any interpretable subtest structures in any forms, and all forms were fairly comparable in difficulty. A comparison of the prior four year accident records with test scores, by sex, demonstrated only one correlation out of ten that was significant beyond the .05 level, although nine correlations were negative, indicating applicants with fewer accidents had higher total scores. It was concluded that all correlations were too low for practical utility, because less than a 3% improvement in predictive accuracy was achieved compared to a test with no correlation with driving record. Supplementary personal information was collected from each applicant, and several background variables were better predictors of prior driving record than rules test scores. One conclusion was that there must be a clear definition of the purposes of the written drivers licensing tests before any item and test form improvements can be made. Trying to incorporate several purposes in a single test, such as prediction of future record as well as testing law knowledge and knowledge of good driving procedures, would require several extensive research projects.

In the second study phase (Creech & Grandy, 1974), five new 25-item written tests were analyzed that were administered to about 12,000 renewal applicants. The analysis was conducted to determine if the new tests were capable of predicting applicants' prior four year accident and violation records. Separate analyses were made for males and females.

Very small correlations were found between total test scores and accidents, with eight out of ten correlations negative and three of these significant ($p < .05$), indicating applicants with fewer accidents had higher total scores. A unifactor structure was found on all tests, and it was hypothesized that this reflected a general "test wiseness" or verbal ability on the part of the applicants. Internal consistency reliability was between .72 and .80 for the new 25-item tests.

Dreyer (1975) gathered drivers licensing test scores for 2,228 previously unlicensed original California drivers license applicants and 2,756 original drivers license applicants who held valid drivers licenses from other states. One year subsequent accident and conviction records were analyzed. Test scores for all written knowledge forms were combined. Total test score accident correlations were significant only for original applicants not previously licensed in another state, and this correlation was negative, indicating subjects with higher test scores had fewer accidents. For both subject groups, correlations of total scores with convictions were negative and significant.

Uhlaner & Drucker (1965) reported on written selection tests developed in the U.S. Army and on the application of selection tests to drivers licensing. The authors felt that an accident criterion could not be used in Army research, because Army vehicle accidents do not occur with the regularity and consistency needed for research. They used a criterion based on the observations and judgments of drivers, supervisors, and associate drivers. There were 22 tests administered, and six were selected as being most predictive of the criterion. These six tests were arranged into two batteries. Validity coefficients ranged from about .35 to .40 for the batteries.

Conley & Huffman (1969) analyzed the Illinois DMV written knowledge tests, and attempted to make several improvements. The objective was to create a test capable of validly testing applicants' knowledge of material in a new drivers handbook. About 14,000 new and renewal applicants were tested. There was no external validation criterion used, although several were considered and rejected. For the five 50-item initial forms, item difficulties were analyzed and item total score correlations were obtained. The initial tests were found to have items with answers that were not chosen, and revisions were made. The readability of the five 30-item final test forms was analyzed, and one was found at the seventh grade level while the other four forms were at the tenth to twelfth grade level. Final forms were also not equivalent in in difficulty. Further studies were recommended to improve the written test.

In summary, the preceding studies demonstrated that for some test forms and subject groups there were weak but significant relationships between knowledge test scores and driving record, but no relationship or a negative relationship was also reported. Most drivers licensing tests are not used to predict driving record but are, in effect, achievement tests in that any applicant is granted a license when he achieves a certain passing grade that demonstrates a level of driver knowledge acceptable to licensing authorities. In California, very few license applicants are "permanently" screened out by the written licensing test.

Only when a clear statement of test purpose is made can validity be established for written licensing tests. If written licensing tests are to have several purposes, the validity of the test must be established for each purpose.

Previous Literature Reviews and Theoretical Discussions

Several literature reviews have been conducted dealing with written drivers licensing tests, and researchers have discussed the improvement of the psychometric properties of written knowledge tests.

Uhlaner & Drucker (1965) discussed the differences between driver selection, where a small number of drivers are chosen from a large pool of potential drivers, and driver screening, where only a small number of drivers are denied a drivers license. They demonstrated that if applicants with test scores in the lowest 10% are denied licenses and a predictive test with a validity coefficient less than .60 is utilized, the majority of rejected applicants would be good drivers in the next time period. The differences between selecting and screening are apparent for a test with a validity coefficient of .35. If such a test is used for selection and the top 25% of test scores are selected, 24 out of 25 drivers so selected will be accident-free, good drivers. But if the test is used for screening, and the bottom 25% of test scores are rejected, only 7 out of 25 would have been bad drivers. The authors felt that a selection ratio which denies licenses to so few potentially bad drivers would not be tolerated.

Miller & Dimling (1969) reviewed the literature on drivers licensing and driver performance and surveyed the drivers licensing, driver improvement, and driver record keeping practices of the 50 states. Their review of the literature led them to suggest a revised approach to the drivers licensing function. A salient fact noted was that the vast majority of the population drives cars, and it would not be feasible to deny the driving "privilege" to a large proportion of the population. A related fact noted was that most of those whose licenses are suspended or revoked continue to drive, so denying the driving "privilege" does not serve to remove many drivers from the road. Many studies were conducted that sought to identify characteristics of "accident prone" drivers, but they account for only a small percentage of all accidents. The authors concluded that if drivers licensing is to make a significant contribution to raising the average level of driving performance on our highways, it must accomplish this by improving the performance of all drivers, rather than by attempting to remove poor drivers from the road.

Due to the unreliability and rarity of recorded accidents and convictions, there are rather severe limitations on any measure or combination of measures used for their prediction. But even with low correlations, the authors concluded they could be useful in a diagnostic-remedial approach to drivers licensing. With this approach, the probability of accident-involvement for individual drivers would be estimated and this probability would be reduced without outright denial or revocation of licenses.

The purpose of reexamination procedures would be to raise the quality of performance of all drivers who are reexamined, not simply to screen out potential accident prone drivers. Suggested minimum standards for state drivers licensing programs were presented.

Another literature review was conducted by Algea (1961) who presented an annotated bibliography of 424 articles related to the licensing of motor vehicle operators. He also summarized and compared various states' licensing practices. Jones & Stouffer (1970) also presented a bibliography on drivers licensing research. Stewart (1970) evaluated the existing organization and functions of the drivers licensing and related programs of the District of Columbia's DMV. An evaluation was made of the vision test, reaction time test, attitude test, rules (knowledge) examination, road test, and classified licensing system. Literature was reviewed and recommendations were made for improvements in, and further research for, all the preceding District of Columbia tests.

Campbell (1959) discussed means of improving written knowledge tests through the application of modern statistical principles of test construction. Included were discussions of reliability, validity, item and form difficulty and form equivalence.

Test Content Studies

The following studies have analyzed the content of written knowledge tests. All tests currently in use have face validity, which means they appear to measure important information needed for safe driving. The purpose of most written licensing tests is to test applicants' knowledge of laws and safe driving principles presented in a vehicle code summary. But what information is really needed by a driver for him to be safe and law abiding? In the absence of a systematic, scientifically sound analysis of the drivers tests, what is considered to be important, safe driving information must be based on traffic laws and intuitively created safe driving principles. The question of test content is critical whether a test is written or machine administered. The following study analyzed the task of driving a motor vehicle and rated the criticality of behaviors identified. These behaviors were used to create a large body of licensing test items.

McKnight & Hundt (1972) described a system to analyze the driver's task used by the Human Resources Research Organization (HumRRO). The method used was to analyze an inventory of drivers' behaviors and then utilize expert judgment to evaluate the criticality to safe driving of each driver's behavior. To assure a comprehensive inventory of driving behaviors, an analysis was made of the total highway transportation system, including the driver, vehicle, roadway, traffic and natural environment. Each aspect of the system was examined to identify specific situations that drivers encounter, and determine the appropriate responses. The behaviors arising out of the systems analysis were organized into 49 groups of intuitively related behaviors or "tasks." The analysis was continued to assure the identification of specific driving responses and associated cues. A group of 100 traffic safety experts, selected from among driver educators, enforcement officers, license officials, and fleet safety personnel were asked to evaluate the criticality of 1,700 identified behaviors to the safety and efficiency of the highway transportation system. The driving behaviors were entered into a set of driving task descriptions, along with their associated criticality indices and supporting information gained through a survey of the driving literature.

This comprehensive list of driving behaviors formed the framework on which the University of Michigan's HSRI (Pollock & McDole, 1973) built an extensive set of licensing knowledge test items. Initially, all states were contacted and all test items currently used were gathered. Available literature on driving principles was reviewed and items were catalogued in a vehicle type by item content matrix. It was deemed necessary to generate new items, because available items did not adequately cover many of the cognitive aspects of driving that were judged "critical" by the HumRRO task description review experts. Law items were made to conform to the Uniform Vehicle Code. A pool of nearly 2,400 items was created, and item indexing and cross indexing schemes were developed. Item writing guides and a test construction primer were created.

The second phase generally involved an evaluation of the passenger car items. Test and one week subsequent retest scores were obtained from 1,797 Iowa driver education students for passenger car items. It was an effort to generate psychometric indicators of each item including item difficulty, reliability, relationship with other items and correlation with verbal ability. Standards were set and rejected items were revised. The result was a set of 1,313 "polished" passenger car items, with the great majority having associated data on difficulty, item response distribution, correlation with verbal ability and test-retest reliability (Berger, Damkot, McDole, & Pollock, 1972). The third, concluding phase involved generation of normative statistics on a sample of passenger car items, and attempts to derive expressions of item validity, using drivers with various personal and driving-related characteristics. Results indicated that clean record renewal applicants out-performed problem drivers on tests composed of a sample of the finished passenger car items.

The HumRRO approach is the most thorough analysis made to date of the driver's task. The item bank created by the University of Michigan's HSRI is the most extensive selection of items available to date, and is the first item bank based on a task analysis.

In summary, this literature review has presented studies that were concerned with driver knowledge tests for license applicants. Written driver knowledge tests can have several purposes. They are commonly used to measure drivers license applicants' knowledge of material presented in a brief vehicle code summary. A written test can be used as an educational treatment, or can be used to predict accident involvement. Written licensing tests have been validated in several states, and results have indicated only slight relationships between test scores and driving records. Strong relationships are needed for accurate individual predictions, or to categorize drivers into groups that will have substantially different future accident involvement.

This is interesting in light of a study by Peck, McBride, & Coppin (1971), who analyzed the distribution of driver accident frequencies, and the ability of measures to predict accidents. They concluded that traffic accident frequencies are not largely predictable, and that no measure or set of measures can be expected to correlate beyond about .30 with a given year's accident records. In short, the absolute size of any validity coefficient is severely limited by the instability of the accident criteria. It appears unlikely that driver knowledge tests will be able to identify a small group of "accident prone" drivers. These, and other considerations have led some researchers to propose a new approach to drivers licensing, where traffic safety treatments, possibly in the form of tests, are given to all drivers in an effort to increase the safe driving abilities of the driving public in general. Even tests that are very weak driving record predictors could be used to separate groups of drivers that will have slightly different future accident involvement. Treatments, rather than license denial, could then be used to make drivers less accident involved. But it is not clear what type of treatment could be effectively used to reduce the probability of accident involvement for drivers so identified.

Another license renewal approach could be to have a minimum license renewal process for drivers who have demonstrated good driving ability by maintaining a clean driving record, and a more complete renewal process for drivers with worse driving records.

DMV field office time and space is a traffic safety resource that should be used for programs with demonstrated effectiveness. Several studies have analyzed new means and approaches to presenting the content of licensing tests in the most educational manner possible. An audio-visual, mechanized approach appears promising. But educational benefits may not be directly related to traffic safety benefits as measured by reduced accidents and convictions.

METHOD

This Method section is divided into several parts. A short summary of the current DMV licensing procedures is presented first. General details for the five separate pilots conducted in this study are presented, and then the specific details for each pilot are presented separately. Data processing and statistical techniques are presented last.

The current California DMV drivers licensing process is as follows. When a person wishes to obtain a drivers license, or renew a California drivers license, he enters one of the 147 DMV field offices located throughout the State. Persons with drivers licenses from other states, those with California licenses that expired more than five years ago, and those who have never had a California drivers license are considered original applicants. Renewal applicants are drivers who appear in a DMV field office to renew their current California drivers license. Licenses are generally issued for three or four years, but have been issued for three to five years in the past.

A class 3 license is needed to operate any two-axle vehicle except a bus or farm labor truck. This includes all passenger cars, pickups and other small trucks. Class 1 and 2 licenses permit a driver to operate large trucks and busses, and class 4 is a motorcycle license. Most original class 3 applicants must pass first a written test of driver knowledge, and then a vision test, and finally a road test. Most renewal applicants must pass first the same written test of driver knowledge, and then the vision test.

A vehicle code summary is available free of charge at all DMV field offices. This summary, titled the California Driver's Handbook, is a summary of all sections of the California Vehicle Code that pertain to the operation of a motor vehicle on California highways, and includes discussions of many safe driving principles. The written test of driver knowledge that is currently used by the DMV tests the information presented in the California Driver's Handbook. Many original and renewal applicants read this handbook before they take the written test. There are five forms of the class 3 written test of driver knowledge, designated DMV Forms 1-5. Each form contains 36 multiple choice test items, but there is considerable item overlap between the five forms because there is only a total of 74 unique test items. A passing grade on these untimed tests is five or fewer items wrong out of 36. All applicants complete their written test in a specially designated testing area in the field office. No seating is provided and, at times, crowding and distractions occur in larger field offices.

Pilots 1-5

The following applies to all five pilots. Subjects were English reading, class 3 drivers license applicants who were appearing for the first time to either renew their current California drivers license (Pilots 1-4), or to obtain a California drivers license for the first time (Pilot 5).

The various test forms used in each pilot were interleaved, and each applicant received only one test form. In Pilots 1, 3, and 4, the January, 1974 version of DMV Forms 1-5 was administered along with several new test forms. These DMV forms were interleaved with the new forms to guard against test administration biases. DMV Forms 1-5 were printed on 5"x19" paper and, therefore, appeared different than the new forms used in Pilots 1-5, which were printed on 8½"x11" paper. Applicants were not told that they were taking part in a testing study when they received their written test form. All tests were untimed, and items were given equal weight in the total scores. Exhibit 1 is an example of the data collection instrument that was part of each applicant's DMV or new test form.

All DMV field office drivers licensing personnel were given instructions, both in a training session and in writing, on how to administer and score the test forms.

Due to practical considerations, field offices were not randomly selected

EXHIBIT 1

BIOGRAPHICAL DATA COLLECTION INSTRUMENT USED FOR PILOTS 1-5

We are going to use this test for research purposes in order to improve our testing procedures. Please answer the following questions. Thank you for your assistance.

1. Sex
   - Male ☐ 1
   - Female ☐ 2
2. Age
   - Under 20 ☐ 0
   - 20 – 29 ☐ 1
   - 30 – 39 ☐ 2
   - 40 – 49 ☐ 3
   - 50 – 59 ☐ 4
   - 60 and over ☐ 5
3. Amount of education
   - Grammar school ☐ 1
   - Some high school ☐ 2
   - High school graduate ☐ 3
   - Some college ☐ 4
   - College graduate ☐ 5
4. Number of miles driven in the past year:
   - None ☐ 1
   - Under 1,000 ☐ 2
   - 1,000 – 4,999 ☐ 3
   - 5,000 – 9,999 ☐ 4
   - 10,000 – 14,999 ☐ 5
   - 15,000 – 19,999 ☐ 6
   - 20,000 – 29,999 ☐ 7
   - 30,000 – 49,999 ☐ 8
   - 50,000 + ☐ 9

for any of the five pilots and field offices with very low volumes of drivers license applicants were not used.

For Pilots 1 and 2, field offices were selected in either Southern California or the San Francisco area. This was done for practical considerations, to minimize the amount of travel time between offices for the research analyst conducting training sessions. Field offices selected for Pilots 3, 4, and 5 were randomly selected from a set of field offices that met certain operational criteria, and also were grouped according to geographical area. Field offices so selected were not a representative sample, but were located in various geographical areas of California.

Every field office was given a specific start and finish date, and the number of test forms supplied to each office was determined by previous volumes of applicants.

As it was stated in the introduction, one purpose of this study was to gather data on a large sample of the items created by HSRI (Berger et al, 1972). Many of those items tested facts and safe driving principles that did not appear in the California Driver's Handbook. No new handbook was created for any of the five pilots. Therefore, applicants that received a test form containing HSRI items had no opportunity to study those facts and safe driving principles that were not covered in the DMV handbook. Many applicants reviewed the DMV handbook, and all anticipated taking a class 3 DMV law test.

Pilots 1 and 2 were conducted to gather data on a large sample of HSRI items. Initial test forms were created from this large sample of HSRI items, and no attention was given to form equivalence or form difficulty. DMV test forms were also administered in Pilot 1. The HSRI and DMV items that were administered in Pilots 1 and 2 were analyzed, and a subset of these items was selected. Several finalized test forms were created from this subset of items, and were administered in Pilots 3, 4, and 5.

Appendix C contains an item listing for each test form analyzed. The HSRI or DMV number is presented for each item appearing on every test form, and are listed in the order they appeared on each test form. Items are presented in Appendices A and B for HSRI and DMV items, respectively.

Pilot 1

Subjects were 18,202 renewal applicants who applied to renew their California drivers license during a two week period at the Hollywood, Van Nuys, Compton, Hayward, Oakland, San Mateo, Daly City, San Jose, Santa Ana, Culver City, or Inglewood field office in early June, 1974. A sample of 300 items was selected from the "finished" pool of 1,313 test items created for passenger car drivers at HSRI (Berger et al, 1972). Items were selected, and test forms were created from the following task categories used by HSRI: steering and turning, passing and following, lane usage and lane changing, stopping, speed control, and surveillance. From each of the preceding six grouped categories, 50 items were selected. Two research analysts selected half of the items for each category that tested California laws, appeared to be most related to typical California driving situations, and tested accident related information. Response distributions were presented by HSRI for each item in the HSRI item pool, and special attention was given to moderately difficult items by research analysts making item selections from the pool. The items selected for each category were assigned to one test form. The remaining half (25 items) were randomly selected from the remaining items, and were assigned to another test form. Twelve test forms containing 25 items each were thereby created, and were designated HSRI Forms 1-12. The four choice items were reduced to three choice items, usually by eliminating the distractor chosen least often by the Iowa student sample used by HSRI. DMV Forms 1-5 were interleaved and administered with the preceding 12 forms to provide data on DMV items and test forms.

Pilot 2

Subjects were 11,966 renewal applicants who applied to renew their California drivers license during a two week period at the Bellflower, Pasadena, Glendale, Santa Monica, Long Beach, San Diego, or Whittier field office in late June and early July, 1974.

A sample of HSRI items that, with few exceptions, were not selected for Pilot 1 were selected from the pool of HSRI passenger car items.

Items were chosen that appeared to be related to typical California driving conditions, were consistent with California laws, and tested accident related information. The four choice HSRI items were reduced to three choice items by always eliminating the distractor chosen least often by the Iowa student sample used by HSRI. Items were assigned to forms such that item difficulties and subject area tested were mixed on all forms. Twelve test forms containing 25 items each were created with 293 selected HSRI items, 22 of which were also used in Pilot 1, and seven new DMV sign items. These 23 forms created for Pilot 2 were designated HSRI Forms 13-24. DMV Forms 1-5 were not administered in Pilot 2.

Pilot 3

Subjects were 6,408 renewal applicants who applied to renew their California drivers license during a two week period at the Stockton, San Jose, San Diego, Pasadena, or Bakersfield field office in early October, 1974.

Following the data analysis for items in Pilot 1 and Pilot 2, 101 HSRI items and 19 DMV items were selected. The test construction approach used was to select items that demonstrated the highest possible positive relationship with the accident criteria. The set of all items with correlations above .01 provided a sufficient number of items for further consideration.

All items selected had difficulty indices below .95, because items above that level tested information known by most applicants. It was determined that few items with difficulty indices below .60 were free from ambiguities and vagueness, so only one item below that level was selected. Items selected also had to appear to be the most related to accidents.

Three 40-item forms were then created as follows. Items were categorized according to the subject area tested, and 40 sets of items with three items per set were created. Each of the three items in a set tested roughly equivalent information. These three items were assigned, one each, randomly to three test forms. The process was continued until all 40 sets of items were exhausted. The test forms so created appeared to be equivalent in difficulty, so no item reassignment was necessary. Test form difficulty was estimated by summing individual item difficulties. Five additional DMV items, that tested knowledge of new laws, were created and placed on each of the three forms, making a total of 45 items on each form.

On each of these three 45-item forms, HSRI and DMV items meeting the item selection criteria were arranged in ascending order of difficulty. This was done so that applicants were not unduly discouraged or frightened by not knowing the answers to the first few questions on the test, which might have affected their performance on the rest of the test. These forms were designated Forms 25-27. Test Form 26 is presented in Exhibit 2. DMV Forms 1-5 were interleaved and administered with the three new test forms. There was an attempt to secure about 600 tests for each of the five DMV forms. These DMV tests were administered to provide data for establishing the pass-fail distribution on Forms 25-27 and DMV Forms 1-5. This was done because these three new tests and the DMV tests were to be used in an upcoming experiment that would control the percent failing as an experimental condition.

Pilot 4

Subjects were 7,023 renewal applicants who applied to renew their California drivers license during a three week period at the Daly City, Fremont, Porterville, Santa Ana, or Oceanside field office in early November, 1974. Out of the 120 HSRI and DMV items selected for Pilot 3, 15 groups of three

EXHIBIT 2

DRIVERS EXAMINATION ON CALIFORNIA VEHICLE CODE AND SAFE DRIVING PRACTICES

FORM 26

HOW TO COMPLETE THE TEST:
Each incomplete statement shows three possible endings. CHOOSE THE ENDING YOU FEEL IS BEST FROM THOSE GIVEN. Mark an X in the box following the ending you believe is best. Please read each statement and its possible endings carefully before marking your choice.

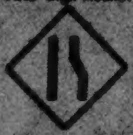
TRAFFIC AND SAFE DRIVING RULES FOR RENEWAL APPLICANTS
(Passing Grade—12 Errors or Less)

---

1. After deciding to change lanes you should check behind you for vehicles:

Turning off the road ☐
About to enter your new lane ☐
Entering the road ☐

2. This sign means:

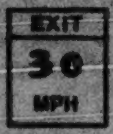


Fewer lanes ahead ☐
Divided highway ahead ☐
Side road ahead ☐

3. If you notice flashing red or yellow lights on a vehicle ahead you should:

Continue at the same speed until you are past the vehicle ☐
Look for objects or people on the road ☐
Turn your bright lights on to warn that you are approaching ☐

4. This sign means you should:



Slow down to 30 MPH on this exit ☐
Go no faster than 30 MPH before leaving the main road ☐
Expect to go 30 MPH after exiting ☐

5. When you reach a corner at the same time as another car coming from a cross street, you should yield the right of way to:

The car on your left ☐
The car on your right ☐
Neither car ☐

6. When behind a vehicle coming to a fork in the road you should expect it to:

Slow down ☐
Stop on the road ☐
Continue at the same speed ☐

7. After you come to a stop and are waiting to continue, you should:

Keep in slight motion by gently pressing gas ☐
Maintain firm pressure on the brake ☐
Shift to neutral and gently press gas ☐

8. When driving behind another vehicle up to an entrance to a highway you should:

Not go faster than 20 MPH ☐
Be prepared for the other vehicle to slow down ☐
Use the left shoulder to pass if the other vehicle is going too slow ☐

9. If the vehicle behind you is following too close you should:

Allow the other vehicle to pass ☐
Hit your brakes hard several times ☐
Drive off the road if possible ☐

10. It is generally safe to drive after taking:

Aspirin ☐
Tranquilizers ☐
Antibiotics ☐

11. All pickup trucks must have commercial license plates unless:

You only drive it to and from work ☐
You permanently attach a camper to it ☐
You never carry a load in the cargo area ☐

12. Before you decide whether to pass on a 2 lane highway you should:

Judge how much distance there is for passing ☐
Shift to a lower gear ☐
Turn on your turn signal ☐

13. When you decide to pass on a 2 lane road you should:

Judge the distance to the first oncoming vehicle ☐
Keep blinking your lights until you finish passing ☐
Check your speed often as you are passing ☐

14. When following vehicles which often stop (busses, post office vans):

Allow more following distance than usual ☐
Do not pass; wait until they turn off the road ☐
Blow your horn to warn them that you are following ☐

15. When passing a car that is driving behind a slower moving vehicle, you should:

Pass on the right, if possible ☐
Be careful because the other car may cut in front of you ☐
Go 5 to 10 MPH above the posted speed limit ☐

PLEASE CONTINUE THE EXAMINATION

EXHIBIT 2
(Continued)

FORM 26

16. If you see a vehicle stopped on the shoulder with its hood up, you should:

Blow your horn to warn its driver ☐
Turn on emergency flashers to warn others and continue at same speed ☐
Slow down and move to the left part of the lane ☐

17. Stopping within an intersection is permitted only:

Where traffic requires ☐
To obtain information from a policeman ☐
When the light turns red ☐

18. In order to avoid eye strain during long trips it is best to:

Keep the vehicle comfortably heated ☐
Move your eyes across the road regularly ☐
Shift your eyes from the road to the dashboard often ☐

19. If your vehicle pulls to one side when the brakes are applied you should:

Have your brakes checked ☐
Balance your wheels ☐
Put more air in the tires on that side ☐

20. When passing a parked vehicle you should:

Leave room in case a door opens or a person steps out ☐
Continue driving at the speed limit since you have the right-of-way ☐
Slow down to 15 MPH until you are past all parked vehicles ☐

21. At a signal controlled intersection a "U" turn is prohibited:

At all times ☐
Unless there is a left turn lane ☐
When a sign says "No U Turn" ☐

22. When possible, persons walking along the road should walk:

On the left side facing traffic ☐
On the right side with traffic ☐
On the side with the least traffic ☐

23. Passing maneuvers result in:

Many fatal accidents per year ☐
Many accidents but few deaths per year ☐
Relatively few serious accidents per year ☐

24. Before making a turn you should:

Look to see if other vehicles will be in your way ☐
Use hand signals first and then mechanical signals ☐
Move slightly to the left when turning right and slightly to the right when turning left ☐

25. The safest time to pass vehicles ahead of you on a 2 lane highway is when:

You are coming to an intersection ☐
A sign indicates there is a hill ahead ☐
A sign indicates the end of a "No Passing" zone ☐

26. If you must leave the road to avoid an accident, you should look for a:

Ditch ☐
Sign or pole ☐
Lawn or field ☐

27. If a vehicle is coming from the right at an intersection where you have the right-of-way:

Be prepared to stop by placing your foot over the brake pedal ☐
Speed up so that you can get through the intersection first ☐
Continue at the same speed since you have the right-of-way ☐

28. Except where special bicycle lanes are provided, bicycles must be ridden near the edge of the roadway:

In the opposite direction to auto travel ☐
In the same direction as auto travel ☐
In either direction, regardless of auto travel ☐

29. Generally you should drive:

Just to the left of the center line ☐
As near as possible to the center line ☐
Well to the right of the center line ☐

30. All vehicles designed for off highway use must be registered with the Department. A driver's license is not required to operate these vehicles:

At any time ☐
If driven on private property ☐
If driven in a State Park ☐

31. For best control on a steep downgrade you should begin to slow down:

Just after starting downhill ☐
Before starting downhill ☐
About halfway down the hill ☐

32. If you cannot see around a curve, you should:

Slow down more than you normally would ☐
Continue as you would through any curve ☐
Drive around the curve at 5 to 10 MPH ☐

33. If you get water in all four brakes:

Your brakes may grab and stop you suddenly ☐
It will take twice as far to stop ☐
Your brakes may not hold at all ☐

PLEASE CONTINUE THE EXAMINATION

EXHIBIT 2
(Continued)

FORM 26

34. You should generally select a speed which:

Is at least 5 MPH below the posted speed limit ☐
Is not more than 5 MPH above the posted speed limit ☐
Is about the average speed of traffic ☐

35. When coming out of a skid on a slippery road you should apply your brakes:

In a series of firm gentle pumping motions ☐
By using increasing pressure until you stop ☐
By using constant pressure until you stop ☐

36. Unmarked intersections, curves, sharp turns, poor road conditions and slow-moving farm vehicles should:

All be expected on country highways ☐
Serve to warn you that you are near a small town ☐
Cause you to drive in the passing lane ☐

37. Before turning at an intersection, you should:

Check cross traffic ☐
Come to a complete stop ☐
Tap your brakes 3 or 4 times ☐

38. When you enter a freeway from an acceleration lane you should be driving at:

The legal speed limit on the freeway ☐
About the same speed as the vehicle you want to enter behind ☐
About 10 MPH below the legal speed limit on the freeway ☐

39. When renewing your driver's license, the Department of Motor Vehicles may require a driving test:

After considering your driving record ☐
When there is evidence that your driving ability may be impaired ☐
Both of the above ☐

40. A good safety rule, when you are sure you have the legal right-of-way, is to:

Always demand it ☐
Never insist on it ☐
Always let the other driver have it ☐

41. At night you should drive slow enough to be able to stop within:

The distance lighted by your headlights ☐
Five car lengths ☐
Ten seconds from the time you hit the brake ☐

42. If the rear of your vehicle is skidding to the left you should:

Turn the top of your steering wheel to the left ☐
Hold your steering wheel from moving until out of the skid ☐
Turn the top of your steering wheel to the right ☐

43. Driving through a pedestrian safety zone marked by raised buttons or markers is:

Permitted if zone is not occupied ☐
Permitted if there is a traffic light control ☐
Prohibited at all times ☐

44. If you are entering a freeway and there is no break in the traffic:

Slow down at the beginning of the acceleration lane but avoid stopping ☐
Stop at the beginning of the acceleration lane ☐
Continue as you would if there were a break and hope that one appears ☐

45. On a first conviction of driving under the influence of drugs and causing bodily injury to any person other than yourself, your license will be suspended:

For one year ☐
Unless you have liability insurance ☐
Unless the court orders no suspension ☐

We are going to use this test for research purposes in order to improve our testing procedures. Please answer the following questions. Thank you for your assistance.

1. Sex

Male ☐ 1
Female ☐ 2

2. Age

Under 20 ☐ 0
20 – 29 ☐ 1
30 – 39 ☐ 2
40 – 49 ☐ 3
50 – 59 ☐ 4
60 and over ☐ 5

3. Amount of education

Grammar school ☐ 1
Some high school ☐ 2
High school graduate ☐ 3
Some college ☐ 4
College graduate ☐ 5

4. Number of miles driven in the past year:

None ☐ 1
Under 1,000 ☐ 2
1,000 – 4,999 ☐ 3
5,000 – 9,999 ☐ 4
10,000 – 14,999 ☐ 5
15,000 – 19,999 ☐ 6
20,000 – 29,999 ☐ 7
30,000 – 49,999 ☐ 8
50,000 + ☐ 9

DO NOT WRITE IN THIS SPACE

D. L. No. __ __ __ __ __ __ __ __ If D.L. No. is NOT known: Name ______________
FIRST MIDDLE LAST
No. wrong __ __
Birthdate ______________
MONTH DAY YEAR
Form 26
Address ______________
NUMBER STREET CITY

items were selected. Each of the three items in a group tested a similar concept or fact. These three items were then randomly assigned, one each, to three test forms that thereby tested roughly equivalent information. Several items had to be reassigned, in blocks of three, to make the three test forms equivalent in difficulty. Test form difficulty was estimated by summing individual item difficulties. Like the test forms created for Pilot 3, items were arranged in ascending order of difficulty on each form. The five DMV law change items created for Pilot 3 were added to each test form, making three 20-item tests. These test forms were designated Forms 28-30. DMV Forms 1-5 were interleaved and administered with the three new test forms. There was an attempt to secure about 600 tests for each of the five DMV forms. These DMV tests were administered to provide data for establishing the pass-fail distribution on Forms 28-30 and DMV Forms 1-5. This was done because these three new tests, and the DMV tests were to be used in an upcoming experiment that would control the percent failing.

Pilot 5

Subjects were 4,698 original applicants who, for the first time, attempted to obtain a California drivers license during a five week period at the Oakland, Turlock, Livermore, Redwood City, Winnetka, Santa Cruz, or Long Beach field office in late October, November and early December, 1974. Fourteen groups of five items were selected from the 101 HSRI items that were selected for Pilot 3. Items were selected that appeared to test accident related information and were appropriate for original applicants. Each of the five items in a group tested a similar concept or fact and were randomly assigned, one each, to five test forms. Several items had to be reassigned to make the five test forms equivalent in difficulty. Test form difficulty was estimated by summing individual item difficulties. Five 14-item test forms that tested roughly equivalent information were created.

Items were arranged in ascending order of difficulty on each 14-item form. These five 14-item test forms were attached to DMV Forms 1-5, creating five 50-item tests. These test forms were designated Forms 31-35. The first 36 items on Forms 31-35 were DMV Forms 1-5, respectively.

Data Processing

For each pilot, all completed test forms with attached biographical data collection instruments, giving drivers license number, number wrong, and sex, age, education, and annual mileage categories were keypunched and verified (double checked). Numbers corresponding to categories were printed on the data collection instrument, and keypunched directly with no recoding. For each multiple choice test item, the applicant's actual choice was keypunched rather than just correct or incorrect response. This was done to allow a thorough item analysis and further to provide for a computer correction of each test form. Any missing data, or test items left blank, were coded as blanks by keypunchers. Programs were written which transferred these cards to tape and checked each punch card for the range of permissible values. Rejected records were reviewed and corrections were made when possible.

Driving record appeared to be the most relevant criteria with which to validate test items and test forms. Prior driving record was used because it was not practicable to wait the amount of time needed to collect reliable subsequent driving records.

The driving record of each California licensed driver is computer stored, and records of individual accidents and convictions are kept for at least five years. A driving record selection program was developed that summed the number of accidents, and also the number of convictions on record at the DMV and added this to the data tape. The accident and conviction data available were as follows. All non-parking traffic convictions were required to be reported to DMV by the courts. All fatal and injury accidents were required to be reported to the DMV by the California Highway Patrol. The Financial Responsibility law required drivers to report to DMV any accident involving over $200 in property damage. If an accident was reported by any one driver, it was entered on the driver record of all drivers involved in the accident. Accident culpability was not analyzed. One limitation of this driver record data is that many minor property damage accidents were not recorded on DMV files.

Approximately a six year prior driving record was selected, although this varied for different applicants. Some applicants had not been driving long enough to have a six year record. The records of some applicants who had been convicted for major violations are kept longer than six years.

Original applicants had no usable prior California driving record. Only slightly over 1% of all applicants for all five pilots did not have a driving record selected by this program.

The computer corrected all test items on all forms, and entered the calculated number wrong on each record. Driving records were corrected for exposure by dividing the number of accidents and number of convictions by the annual mileage category, giving an accident rate and conviction rate in addition to the number of accidents and convictions. Accident and conviction rates were not calculated for subjects in the "none" mileage category.

Reliability indices were calculated for all test forms. This statistic is an index of a test's ability to yield a consistent measure of a particular ability or trait for a certain population under certain conditions. There are three methods that may be used to estimate the consistency of measures from a test. They are, first, a correlation of test and subsequent retest scores, second, a correlation of scores on alternate forms, and third, internal consistency measures which correlate one half of a test with another half. Test-retest reliability, alternate forms reliability, and internal consistency reliability may be considered coefficients of stability, equivalence, and consistency, respectively. The appropriate reliability measure to use depends on the specific test, subjects, testing situation, and meaning to be attached to the reliability measure.

Alternate forms and test-retest reliability measures could not feasibly be obtained for this study. The only measure of test form reliability attempted was therefore an even-odd item split, with reliability of the full length test estimated from the correlation of halves by the appropriate Spearman-Brown formula. An internal consistency approach, such as an even-odd item split, is best suited to a test that measures the same ability in all its parts. If two different parts of the test yield similar measurements, it is estimated that the whole test yields consistent, and therefore reliable, measurements. Longer test forms typically yield higher reliability measures. But a test composed of questions that measure knowledge of traffic laws and regulations, sign and road markings and defensive driving techniques may not be measuring a single ability, so an internal consistency reliability measure may not be the best reliability estimate. More than one type of reliability estimate is desirable.

Statistical Techniques

All correlations were product moment correlation coefficients, and were calculated by a Biomedical Computer Program, created by the University of California. Program BMD03D was used, which allows records with incomplete information to be deleted only for the correlations involving the missing data. Refer to Table 1 in the Results Section for the percent of applicants with missing data for each variable. All tests of statistical significance were two-tailed, and statistics at or greater than the .05 level of probability were considered significant. Although there were violations of the assumptions underlying the use of "t" and "F" tests, there is evidence that both tests are sufficiently robust so that obtained significant results were due to differences between means and not due to the violations of the assumptions that occurred (Boneau, 1960).

RESULTS

The results are divided into the following parts. First, distributions of biographical variables and driving record data for all subjects are presented by pilot. Test characteristics are then presented for DMV test forms. Characteristics of HSRI Forms 1-24 from Pilots 1 and 2 are presented next, with comparisons made between these forms and DMV forms. Characteristics of final Forms 25-27 (45 items) and 28-30 (20 items) are presented with comparisons made between these forms and DMV forms. Characteristics of Forms 31-35 (50 items) that were administered to original applicants are presented next, with comparisons made between original and renewal applicants. Items that differed markedly in difficulty for original, as compared to renewal, applicants are presented. Item results are presented last, and the reader is referred to Appendices A and B for complete item statistics for HSRI and DMV items, respectively.

Subjects

Subject samples were compared in respect to their distributions of sex, age, education, annual mileage, accidents and convictions. This was done to verify the comparability of the renewal applicants selected for Pilots 1-4. Table 1 presents the percentage distribution of subjects by biographical data and driving record for Pilots 1-5.

For sex, age, education and annual mileage variables, the unknown category consists of applicants who chose not to give that information. Unknown categories under accidents and convictions consist of applicants for whom no driving record was available.

In Pilots 1 and 2, applicants who had no driving record available were eliminated from the sample. Because prior driving record was used, no usable California driving record was available for subjects from Pilot 5, who were original applicants and had not been previously licensed in California. Subjects from Pilots 1-4 had similar distributions, indicating that the renewal applicant groups were comparable. Subjects from Pilot 5, who were original applicants, tended to be younger and therefore less educated, and reporting driving fewer miles.

DMV Test Form Results

Results are presented here for DMV Forms 1-5 that were administered to renewal applicants. Results for DMV Forms 1-5 that were administered to original applicants are presented later.

Tables in this section, presenting characteristics of test forms, are in the same general format, but are broken down into groups of test forms and discussed separately. The following statements are, therefore, true for tables in this section that present test characteristics for any forms and, for the sake of brevity, are stated only once. The first column is labelled "Form," and in this column the test form number is presented. Column 2 is labelled "Number of subjects" and indicates the number of subjects that were tested with the corresponding test form. Column 3 is labelled "Mean number wrong" and indicates the mean number of equally weighted items that were answered incorrectly by applicants who were administered the corresponding test form. Column 4 is labelled "Split half reliability." An even-odd item split was made, and halves were correlated to obtain an internal consistency measure of test form reliability. A discussion of reliability will be

TABLE 1

PERCENTAGE DISTRIBUTION BY SEX, AGE, EDUCATION, ANNUAL MILEAGE, ACCIDENTS, AND CONVICTIONS BY PILOT

Variable	Pilot				
	1	2	3	4	5
Number of subjects	18,202	11,966	6,408	7,023	4,698
Sex					
Male	52.80	53.14	50.89	50.68	52.30
Female	46.74	46.41	47.41	48.72	46.88
Unknown	.46	.45	1.70	.60	.81
Age					
Under 20	N/A	N/A	6.51	6.45	47.45
20 - 29	28.03*	27.47*	24.17	22.84	32.46
30 - 39	19.73	18.18	18.82	21.22	10.13
40 - 49	16.72	16.30	15.11	16.16	4.30
50 - 59	18.00	20.37	16.23	15.02	2.55
60+	17.02	17.23	17.34	17.09	2.13
Unknown	.49	.45	1.83	.61	.98
Education					
Grammar school	4.76	[illegible].76	5.97	4.98	1.30
Some high school	13.18	12.32	14.20	14.44	45.25
High school graduate	28.03	28.07	26.08	28.72	18.16
Some college	32.07	32.56	33.49	34.14	18.99
College graduate	21.28	22.73	18.66	16.96	15.16
Unknown	.68	.56	2.00	.75	1.15
Annual Mileage					
None	1.12	.79	.92	.71	37.80
Under 1,000	6.71	5.78	6.80	6.48	21.80
1,000 - 4,999	20.59	19.46	21.77	22.26	9.64
5,000 - 9,999	22.06	21.97	22.21	21.85	8.68
10,000 - 14,999	23.15	25.20	23.28	22.39	8.75
15,000 - 19,999	10.25	11.13	9.16	10.03	4.24
20,000 - 29,999	8.01	8.54	7.80	9.21	3.77
30,000 - 49,999	3.90	3.57	3.39	3.73	1.49
50,000+	2.83	2.47	1.58	1.87	1.21
Unknown	1.39	1.07	3.09	1.48	2.62
Accidents					
0	69.76	74.42	73.74	72.93	N/A
1	23.13	20.69	22.22	20.29	N/A
2	5.47	3.98	4.09	4.23	N/A
3	1.25	.73	.86	.83	N/A
4+	.40	.19	.22	.26	N/A
Unknown	.00	.00	.87	1.47	N/A
Convictions					
0	39.67	41.99	43.95	47.56	N/A
1	25.45	25.38	25.25	24.86	N/A
2	13.95	13.91	12.87	11.39	N/A
3	7.28	7.31	6.91	5.55	N/A
4	4.92	4.18	3.79	3.30	N/A
5	2.88	2.65	2.37	1.95	N/A
6	1.84	1.38	1.31	1.37	N/A
7	1.19	.99	.78	.75	N/A
8+	2.57	2.05	1.86	1.75	N/A
Unknown	.25	.18	.87	1.47	N/A

*Under 20 age group included.

made later. The remaining columns contain correlations of driving record and biographical data with number wrong on the corresponding test form. A positive correlation in the "Accidents" column indicates that subjects with more accidents tended to get a greater number of test items wrong than subjects with fewer accidents. A positive "Accident rate" correlation indicates that subjects with a higher accident rate, corrected for mileage, tended to get more items wrong than those with lower accident rates. Similarly for "Convictions," and "Conviction rate," positive correlations indicate that subjects with more convictions, or a higher conviction rate tended to get more items wrong. A positive "Sex" correlation indicates that females tended to get more items wrong than males. A positive "Age" correlation indicates that older applicants tended to get more items wrong than younger applicants. "Education" correlations were negative for all test forms, which means that less educated subjects tended to get more items wrong than subjects who were more educated. "Annual mileage" correlations also were negative, which means that subjects who drove fewer miles tended to get more items wrong than subjects who drove more miles. The magnitude of all preceding correlations with number wrong was a function of the particular test form analyzed. Each table giving test form results contains a note indicating the magnitude a correlation in that table must have to reach statistical significance. Because all correlations were rounded to two digits, the magnitude a correlation needed to reach statistical significance was also rounded to two digits.

Renewal applicants were administered DMV Forms 1-5 in Pilots 1, 3, and 4. Test characteristics of DMV Forms 1-5 from these pilots combined are presented in Table 2. The following results were obtained for DMV Forms 1-5.

TABLE 2

TEST CHARACTERISTICS FOR DMV FORMS 1-5

(Renewal applicants)

Form	Number of subjects	Mean number wrong	Split half reliability	Correlations with number wrong							
				Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Annual mileage
1..........	2,394	3.45	.65	.04	.03	.12	.14	-.03	.06	-.27	-.10
2..........	2,436	2.52	.78	.09	.13	.15	.13	-.08	.10	-.30	-.03
3..........	2,414	2.99	.70	.01	.04	.04	.08	.03	.13	-.27	-.07
4..........	2,410	3.22	.71	.03	.06	.13	.15	.01	.10	-.34	-.08
5..........	2,403	3.51	.72	.02	.05	.02	.07	.07	.10	-.30	-.12

NOTE: Any correlation .04 or greater in absolute magnitude is significant at the .05 level.

All DMV test form correlations with driving record variables were positive. Two forms were significantly correlated with accidents and four were significantly correlated with convictions. Four forms were significantly correlated with accident rate, and all five forms were significantly correlated with conviction rate. So a total of 15 out of 20 test form correlations with driving record variables were significant, and indicated that subjects with more accidents or convictions on record got more items wrong than subjects with fewer accidents or convictions on record. All forms were significantly correlated with education, indicating more highly educated subjects scored higher than subjects with less education. All forms were significantly correlated with age, and four were significantly correlated with annual mileage indicating younger drivers and those that drove more miles scored higher than their counterparts. There were signfificant differences in mean number wrong on DMV Forms 1-5 (F = 61.05, df = 4,12042, p < .01).

Table 3 is a matrix of correlations between biographical data, driving record, and test data of DMV Forms 1-5 combined that were administered to about 12,000 renewal applicants. The following are DMV test form results from that table.

Education was the highest correlation obtained with number wrong. Significant correlations were also obtained between age and number wrong, and annual mileage and number wrong. These results indicate that younger, more highly

TABLE 3

MATRIX OF CORRELATIONS BETWEEN BIOGRAPHICAL DATA, DRIVING RECORD, AND TEST DATA OF DMV FORMS 1-5 COMBINED

(Renewal applicants)

Variable	Variable							
	Sex	Age	Education	Annual mileage	Accidents	Accident rate	Convictions	Conviction rate
Sex...............	1.00							
Age...............	.01	1.00						
Education..........	-.02	-.24	1.00					
Annual mileage.....	-.35	-.10	.18	1.00				
Accidents..........	-.13	-.08	.00	.11	1.00			
Accident rate......	-.08	-.07	-.04	-.11	.86	1.00		
Convictions........	-.20	-.19	.01	.19	.38	.25	1.00	
Conviction rate....	-.19	-.14	-.04	-.11	.20	.33	.76	1.00
Number wrong.......	.00	.10	-.24	-.08	.04	.06	.10	.12

NOTE: A correlation .02 or greater in absolute magnitude is significant at the .05 level.

educated subjects and those that reported higher annual mileage obtain higher test scores than their counterparts. All correlations of number wrong on DMV forms combined, with driving record variables, were positive and significant. But it should be noted that specific DMV test forms differ from one another in their correlations with driving record variables and biographical variables. The correlation between accidents and education, rounded to 3 digits, was .004. The magnitude needed for a correlation to reach statistical significance was .018. A first order, partial correlation between accidents and education, with the effects of mileage held constant, was .015, still not significant.

The mean number wrong on DMV Forms 1-5 combined is presented in Table 4 and Figure 1 for accident-free and accident-involved renewal applicants by education level. Accident-involved subjects were those with one or more accidents on their six year driving record. Accident-free subjects had a lower mean number wrong in every education category. Accident-free subjects in the grammar school education group had a mean number wrong of 4.99 whereas accident-free college graduates had a mean number wrong of 2.03. A passing grade was five or less wrong. The correlation between number wrong and education was .26 and between number wrong and accidents was .04, both significant. Education was unrelated to accidents (r = .00). The relationship between education and number wrong appears to be linear, with every education group achieving a lower mean number wrong than the next lower education group, for both accident-free and accident-involved drivers. Mean number wrong by age and sex is presented in Table 5 and Figure 2. The correlation between number wrong

TABLE 4

MEAN NUMBER WRONG BY ACCIDENTS AND EDUCATION
(Renewal applicants, DMV Forms 1-5)

Variable	Education					
	Grammar school	Some high school	High school graduate	Some college	College graduate	Total
Accident free......	4.99	3.71	2.86	2.60	2.03	2.86
Accident involved..	5.19	4.10	3.15	2.74	2.27	3.08

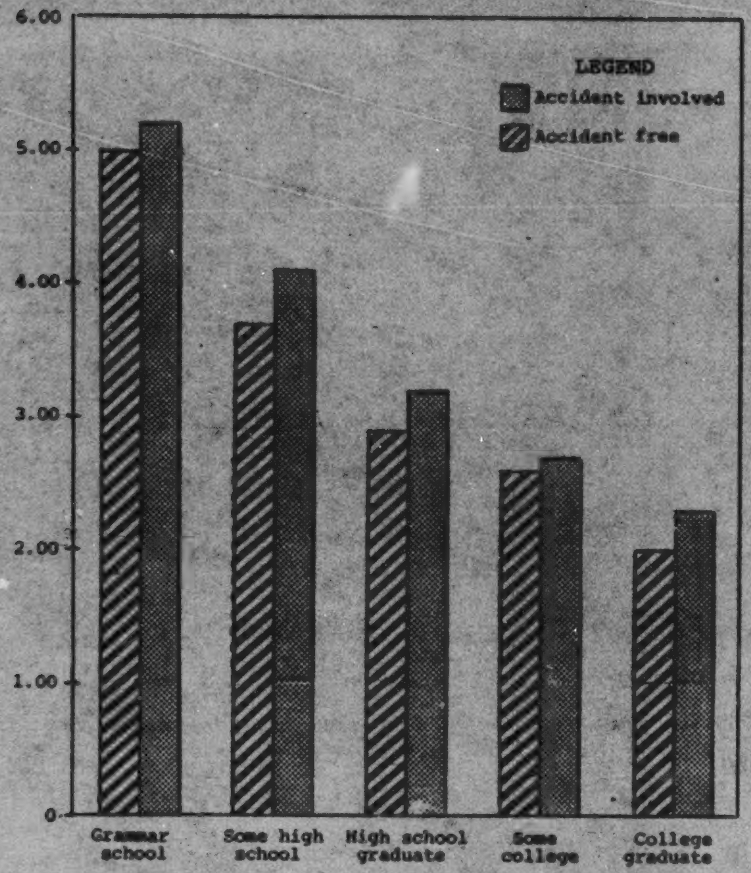


Fig. 1 -Mean number wrong by education and accidents (Renewal applicants, DMV Forms 1-5)

TABLE 5

MEAN NUMBER WRONG BY AGE AND SEX
(Renewal applicants, DMV Forms 1-5)

Sex	Age					
	Under 30	30-39	40-49	50-59	60+	Total
Male................	2.78	2.39	2.73	2.98	3.71	2.91
Female.............	2.87	2.76	2.81	2.93	3.43	2.95

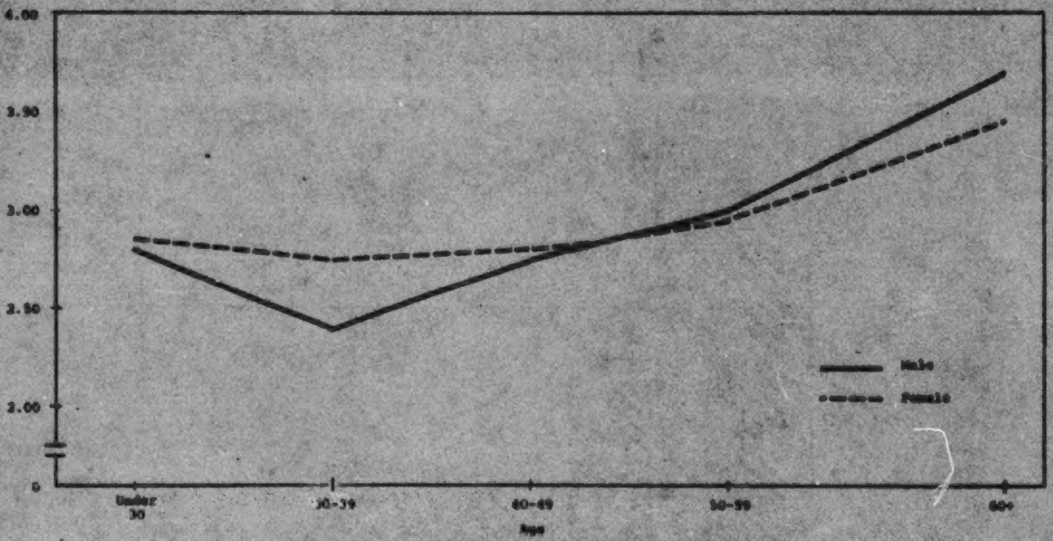


Fig. 2.-Mean number wrong by age and sex. (Renewal applicants, DMV Forms 1-5)

and age was .10 which was significant. Older drivers tended to get more items wrong than younger drivers. The 30-39 age group had the lowest mean number wrong for both males and females. There was no significant correlation between number wrong and sex (r = .00).

A relevant consideration is what effects differences in form difficulty of DMV forms have on the failure rates of different DMV test forms. Table 6 presents a cumulative percentage of subject scores by form.

The following percentages of subjects obtained failing scores on DMV Forms 1-5 respectively: 19.25, 9.67, 13.13, 15.44, and 9.60. More than twice as many renewal applicants were failed with Form 1 as with Form 5.

In summary, scores on DMV test forms were significantly correlated with subjects' education, age, and annual mileage. For each test form, the highest test score correlation obtained was with subjects' educational level. Test form correlations with driving record variables were low in magnitude, but were all positive. A total of 15 out of 20 test form correlations with driving record variables were significant, indicating that subjects with more accidents or convictions on record got more items wrong than subjects with fewer accidents and convictions on record. Test form correlations with

TABLE 6

CUMULATIVE PERCENTAGE OF SUBJECTS, NUMBER WRONG BY FORM

(Renewal applicants, DMV Forms 1-5)

Number wrong	Form					
	1	2	3	4	5	1-5 combined
0..............	100.00	99.98	100.00	100.00	99.98	100.00
1..............	88.76	78.75	86.45	87.88	80.67	84.50
2..............	72.22	58.02	67.77	69.71	59.11	65.36
3..............	55.51	40.42	48.55	51.62	39.97	47.21
4..............	41.18	26.53	32.97	36.52	26.78	32.79
5..............	29.61	16.72	22.49	24.90	17.13	22.16
6..............	19.25	9.67	13.13	15.44	9.60	13.41
7..............	13.53	6.87	9.40	11.37	6.23	9.48
8..............	9.39	4.19	6.25	7.80	3.86	6.30
9..............	5.92	2.62	4.34	5.68	2.20	4.16
10..............	3.50	1.92	2.68	3.77	1.58	2.70
11..............	2.25	1.43	1.72	2.40	1.21	1.81
12..............	1.29	1.14	1.06	1.69	.75	1.20
13..............	.75	.81	.73	1.03	.54	.78
14..............	.46	.56	.44	.57	.46	.51
15..............	.29	.44	.36	.36	.29	.36
16..............	.12	.36	.32	.28	.17	.26
17..............	.08	.24	.24	.16	.00	.15
18..............	.04	.16	.12	.16	.00	.10
19..............	.04	.12	.04	.12	.00	.07
20+..............	.04	.12	.04	.08	.00	.06
Number of subjects......	2,394	2,426	2,414	2,410	2,403	12,047

NOTE: Failing grade is six or more wrong.

convictions tended to be greater in magnitude than test form correlations with accidents. DMV forms were not equivalent in difficulty.

HSRI Test Form Results

Test characteristics for HSRI Forms 1-24 are presented in this section. Comparisons are made between forms that had HSRI items selected at random with forms that had items selected by raters from the HSRI item pool. Comparisons are made between HSRI forms and DMV forms.

Test characteristics of HSRI Forms 1-24 are presented in Table 7. Forms 1-12 were 25-item forms from Pilot 1, and 13-24 were 25-item forms from Pilot 2. In the first column of Table 7, form number and HSRI subject category is presented. Forms with items that were selected at random have the word "random" after the HSRI category name. Forms 13-24 contained items from various HSRI categories, and are termed "intermixed," meaning each form had items from several HSRI categories.

All test form correlations with biographical variables were significant. Males scored higher than females, younger drivers scored higher than older drivers, more highly educated drivers scored higher than those with less education, and drivers who reported driving more miles scored higher than those who reported driving less miles.

Driving record correlations with number wrong were low in magnitude and were both positive and negative. A positive test form correlation indicated that subjects with better driving records, that is fewer accidents or convictions, scored fewer items wrong than subjects with worse driving records. One HSRI category form had a significant positive correlation with accidents. Three intermixed forms had significant negative correlations with accidents. Two HSRI category forms were significantly correlated with convictions, but only one was positively correlated. Four intermixed forms had significant negative correlations with convictions.

No category test form was significantly correlated with all driving record variables, and no category was consistely more related to driving record variables than other categories.

Table 8 presents a comparison of those HSRI forms with items that were selected at random with HSRI forms that had items selected by two research analysts. Means were calculated for each test characteristic for both groups of test forms, and a "t" statistic computed for each pair of means. The only significant difference obtained was in mean test form difficulty. Forms with items selected by research analysts were significantly more difficult, and had similar correlations with driver record and biographical variables as forms with randomly selected items.

TABLE 7

TEST CHARACTERISTICS OF HSRI FORMS 1-24

(Renewal applicants)

Form and content	Number of subjects	Mean number wrong	Split half reliability	Correlations with number wrong						
				Accidents	Accident rate	Convictions	Sex	Age	Education	Annual mileage
1. Surveillance........................	1,068	9.35	.62	-.00	.04	.02	.16	.18	-.29	-.15
2. Surveillance-random.............	1,077	3.18	.59	.01	.07	.02	.14	.13	-.31	-.10
3. Stopping...........................	1,068	7.81	.48	-.01	.06	-.06	.19	.13	-.32	-.17
4. Stopping-random..................	1,077	7.02	.51	-.05	-.03	-.03	.20	.30	-.35	-.15
5. Passing and following...........	1,075	7.31	.73	-.00	.07	.02	.19	.16	-.42	-.20
6. Passing and following-random...	1,075	4.49	.72	.03	.05	.03	.13	.14	-.43	-.14
7. Turning and steering............	1,076	8.58	.52	.05	.08	.06	.20	.11	-.34	-.13
8. Turning and steering-random....	1,064	5.81	.66	.06	.09	-.03	.21	.11	-.30	-.16
9. Speed control.....................	1,075	10.34	.57	-.03	-.01	.02	.14	.22	-.39	-.09
10. Speed control-random...........	1,072	8.07	.73	.00	.03	.06	.13	.13	-.38	-.12
11. Lane usage and changing.......	1,072	6.39	.51	.01	.07	.04	.15	.11	-.33	-.21
12. Lane usage and changing-random	1,080	3.25	.57	.00	.03	-.02	.08	.11	-.40	-.13
13. Intermixed.......................	991	4.33	.45	-.02	.03	-.01	.21	.08	-.28	-.17
14. Intermixed.......................	978	5.47	.57	-.07	.01	-.06	.21	.20	-.26	-.23
15. Intermixed.......................	998	3.67	.61	-.06	-.02	-.06	.15	.23	-.34	-.13
16. Intermixed.......................	985	3.30	.60	-.01	.06	-.01	.21	.17	-.35	-.17
17. Intermixed.......................	997	5.04	.48	-.02	.04	-.04	.22	.21	-.28	-.25
18. Intermixed.......................	1,002	6.11	.46	-.04	.01	-.03	.17	.16	-.31	-.17
19. Intermixed.......................	1,005	4.77	.60	-.03	.01	.00	.17	.11	-.30	-.18
20. Intermixed.......................	1,013	4.55	.55	-.02	.03	-.03	.23	.14	-.38	-.21
21. Intermixed.......................	998	5.20	.69	-.06	-.02	-.12	.10	.30	-.41	-.17
22. Intermixed.......................	993	3.97	.51	.02	.05	-.07	.07	.18	-.26	-.13
23. Intermixed.......................	998	5.69	.50	.01	.05	.02	.14	.10	-.27	-.13
24. Intermixed.......................	1,008	3.32	.58	-.05	.00	-.05	.06	.30	-.34	-.13

NOTE: Any correlation .06 or greater in absolute magnitude is significant at the .05 level.

TABLE 8

MEAN TEST CHARACTERISTICS OF TEST FORMS WITH RANDOM OR RATER SELECTED ITEMS

(Renewal applicants)

Test characteristics	Item selection		
	Rater[(a)]	Random[(b)]	t
Split half reliability...	.572	.630	-1.12
Difficulty...............	8.200	4.800	4.00**
Correlations:			
Accidents..............	.003	.008	-0.27
Accident rate..........	.052	.041	0.54
Convictions............	.013	.005	0.38
Sex....................	.172	.147	1.10
Age....................	.150	.133	0.72
Education..............	-.365	-.348	-0.61
Annual mileage.........	-.158	-.148	-0.48

**$p < .01$.

(a) Forms 1, 3, 5, 7, 9, and 11 contained 25 HSRI items each that were selected by research analysts.

(b) Forms 2, 4, 6, 8, 10, and 12 contained 25 HSRI items each that were selected at random.

Table 9 presents a comparison of HSRI Forms 1-24 with DMV test forms. Because DMV forms contain 36 items each and HSRI contain only 25 items each, no comparisons of split-half reliability or form difficulty were made. Means were calculated for correlation between biographical data or driving record and number wrong for both groups, and a "t" statistic computed for each pair of means. DMV forms were significantly more correlated with accidents and convictions, but were significantly less related to applicants' sex, age, education and annual mileage than HSRI item forms.

Final Test Form Results

Test characteristics of the 45-item and 20-item final test forms are presented, and comparisons are made between these forms and DMV forms. Test characteristics of Forms 31-35 that were administered to original applicants

TABLE 9

MEAN DRIVER RECORD AND BIOGRAPHICAL DATA CORRELATIONS
WITH NUMBER WRONG OF HSRI FORMS 1-24 AND DMV FORMS 1-5

(Renewal applicants)

Variable	Form		t
	HSRI	DMV	
Accidents..........	-.011	.038	-2.91**
Accident rate......	.033	.062	-1.68
Convictions........	-.015	.092	-4.72**
Sex................	.160	.006	6.41**
Age................	.162	.098	2.31*
Education..........	-.334	-.268	-2.59*
Annual mileage.....	-.163	-.080	-4.48**

$^{*}p < .05$.

$^{**}p < .01$.

are presented last and comparisons are made between original and renewal applicants.

Test characteristics of Forms 25-30 are presented in Table 10. Forms 25-27 were 45-item forms used in Pilot 3, and were created with 101 HSRI items and 24 DMV items that met certain selection criteria following Pilots 1 and 2. These were items from HSRI Forms 1-24 and DMV Forms 1-5 that had positive correlations of at least .01 with accidents. Forms 28-30 were 20-item forms used in Pilot 4, and were created with a subset of the items

TABLE 10

TEST CHARACTERISTICS OF HSRI FORMS 25-30

(Renewal applicants)

Form	Number of subjects	Mean number wrong	Split half reliability	Correlations with number wrong							
				Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Annual mileage
25.........	1,058	7.48	.75	.04	.06	.14	.16	.02	.13	-.41	-.16
26.........	1,061	8.16	.75	.10	.14	.10	.15	.21	.08	-.44	-.25
27.........	1,078	7.88	.73	.07	.12	.09	.11	.07	.06	-.45	-.17
28.........	1,168	3.90	.61	.06	.09	.02	.09	-.03	.15	-.36	-.12
29.........	1,171	4.19	.52	.03	.03	.02	-.01	.17	.01	-.33	-.18
30.........	1,170	4.00	.53	-.01	.02	-.01	.02	.12	.06	-.39	-.16

NOTE: Any correlation .06 or greater in absolute magnitude is significant at the .05 level.

from Forms 25-27, respectively. Test construction details were presented in the Method section.

The 45-item forms (Forms 25-27) all had positive test score (number wrong) correlations with driving record variables, indicating subjects with fewer accidents and convictions got fewer items wrong. Two were significantly correlated with accidents, and all three were significantly correlated with accident rate, convictions, and conviction rate. All three 45-item forms were significantly correlated with education and annual mileage, indicating more highly educated subjects and those who reported higher annual mileage got fewer items wrong than their counterparts. For each 45-item test form, the highest test score correlation obtained was with education. The 20-item test forms (Forms 28-30) had both positive and negative correlations with driving record variables. Only Form 28 had a significant correlation with accidents or accident rate or conviction rate, and they were positive correlations. None of the 20-item forms were significantly correlated with convictions. Like the 45-item forms, the 20-item forms were significantly correlated with education and annual mileage. For each 20-item form, the highest test score correlation obtained was with education.

Table 11 presents a comparison of the 45-item forms (Forms 25-27) with the 20-item forms (Forms 28-30). Means were calculated for correlations between biographical data or driving record and number wrong for Forms 25-27 and Forms 28-30, and a "t" statistic was computed for each pair of means. The 20-item forms were significantly less related to convictions and conviction rate, and were also less related to education than the 45-item forms.

Table 12 presents a correlation matrix of driver record, biographical data, and number wrong for one 45-item form (Form 26). All correlations except those with number wrong, are typical of the results obtained on all forms administered to renewal applicants, and are similar to those reported in Table 3 for DMV Forms 1-5.

TABLE 11

MEAN DRIVER RECORD AND BIOGRAPHICAL DATA CORRELATIONS WITH NUMBER WRONG OF HSRI FORMS 25-27 AND 28-30

Variable	Form		t
	25-27	28-30	
Accidents..........	.070	.027	1.62
Accident rate......	.107	.047	1.84
Convictions........	.110	.010	5.48**
Conviction rate....	.140	.033	3.20*
Sex................	.100	.087	.16
Age................	.063	.073	- .18
Education..........	-.433	-.320	-5.83**
Annual mileage.....	-.187	-.150	- .94

$^{*}p < .05.$

$^{**}p < .01.$

TABLE 12

MATRIX OF CORRELATIONS BETWEEN BIOGRAPHICAL DATA, DRIVING RECORD, AND TEST DATA OF FORM 26

(Renewal applicants)

Variable	Variable							
	Sex	Age	Education	Annual mileage	Accidents	Accident rate	Convictions	Conviction rate
Sex................	1.00							
Age................	.02	1.00						
Education..........	-.08	-.16	1.00					
Annual mileage.....	-.44	-.09	.21	1.00				
Accidents..........	-.13	-.07	-.05	.09	1.00			
Accident rate......	-.07	-.06	-.07	-.09	.88	1.00		
Convictions........	-.24	-.19	-.04	.16	.33	.29	1.00	
Conviction rate....	-.16	-.15	-.03	-.08	.28	.46	.78	1.00
Number wrong.......	.21	.00	-.44	-.25	.10	.14	.18	.15

NOTE: A correlation .06 or greater in absolute magnitude is significant at the .05 level.

In Table 13, a comparison is made between Forms 25-27 and DMV Forms 1-5. Because DMV forms contained 36 items each and Forms 25-27 contained 45 items each, no comparisons of split-half reliability or form difficulty were made. Means were calculated for correlations between biographical data or driving

TABLE 13

MEAN DRIVER RECORD AND BIOGRAPHICAL DATA CORRELATIONS WITH NUMBER WRONG OF HSRI FORMS 25-27 AND DMV FORMS 1-5

(Renewal applicants)

Variable	Form		t
	HSRI	DMV	
Accidents..........	.070	.038	1.42
Accident rate......	.106	.062	1.52
Convictions........	.110	.092	.49
Conviction rate....	.140	.114	1.06
Sex................	.100	.006	1.87
Age................	.063	.098	- 1.11
Education..........	-.433	-.268	-11.17**
Annual mileage.....	-.187	-.080	- 3.40*

*$p < .05$.

**$p < .01$.

record and number wrong for both groups, and a "t" statistic computed for each pair of means. The new 45-item forms were significantly more related to education level and annual mileage than DMV forms. There were no significant differences between the 45-item forms and DMV forms in their correlations with driving record, age, or sex. Overall, both DMV forms and the 45-item forms were significantly correlated with driving record variables, age, education, and annual mileage.

Table 14 presents a similar comparison for Forms 28-30 with DMV Forms 1-5. DMV forms were more related to conviction rate, but less related to education and annual mileage than the 20-item forms (Forms 28-30). All other comparisons were not significant.

Test form results for original applicants are presented in Table 15. Forms 31-35 were used in Pilot 5, which was conducted with original drivers license applicants. Forms 31-35 were 50-item forms that consisted of 14 HSRI items that were attached to DMV Forms 1-5. These original applicants were applying for their first California drivers license, so they had no usable prior California driving record.

TABLE 14

MEAN DRIVER RECORD AND BIOGRAPHICAL DATA CORRELATIONS WITH NUMBER WRONG OF HSRI FORMS 28-30 AND DMV FORMS 1-5

(Renewal applicants)

Variable	Form		t
	HSRI	DMV	
Accidents..........	.027	.038	- .48
Accident rate......	.047	.062	- .54
Convictions........	.010	.092	-2.32
Conviction rate....	.033	.114	-2.63*
Sex................	.087	.006	1.54
Age................	.073	.098	- .74
Education..........	-.320	-.268	-3.00*
Annual mileage.....	-.150	-.080	-2.77*

*$p < .05$.

TABLE 15

TEST CHARACTERISTICS OF FORMS 31-35

(Original applicants)

Form	Number of subjects	Mean number wrong	Split half reliability	Correlations with number wrong			
				Sex	Age	Education	Annual mileage
31.........	940	7.19	.80	.02	.03	-.06	-.04
32.........	926	5.77	.82	-.00	-.03	-.18	-.12
33.........	938	5.95	.80	.11	.01	-.14	-.10
34.........	954	6.62	.73	.05	-.04	-.24	-.13
35.........	940	6.25	.73	.10	-.09	-.20	-.15

NOTE: Any correlation .06 or greater in absolute magnitude is significant at the .05 level.

Age, education, and annual mileage distributions are highly skewed for original applicants, resulting in correlations of lower magnitude than for renewal applicants. Overall, the results indicate that original applicants who are more educated, and those that reported higher annual mileage got fewer items wrong on Forms 31-35 than their counterparts.

Table 16 contains results for the DMV Forms 1-5 which were part of Forms 31-35, respectively. Only one form was significantly related to sex, and one to age. Four forms were significantly correlated with education, and all were negative, indicating more highly educated subjects got fewer items wrong than less educated subjects.

TABLE 16

TEST CHARACTERISTICS OF DMV FORMS 1-5

(Original applicants)

Form	Number of subjects	Mean number wrong	Split half reliability	Correlations with number wrong			
				Sex	Age	Education	Annual mileage
1..........	940	3.87	.75	-.00	.04	-.04	-.01
2..........	926	2.90	.80	-.04	.02	-.10	-.01
3..........	938	3.46	.75	.07	.03	-.11	-.05
4..........	954	3.62	.71	.01	.04	-.13	.01
5..........	940	3.04	.70	.03	-.06	-.11	-.02

NOTE: Any correlation .06 or greater in absolute magnitude is significant at the .05 level.

In Table 17, a comparison is made between total score on DMV Forms 1-5 for original versus renewal applicants. Each form was significantly more difficult for original applicants, who tended to be younger and less well

TABLE 17

MEAN NUMBER WRONG OF ORIGINAL AND RENEWAL APPLICANTS

(DMV Forms 1-5)

DMV form	Original applicants	Renewal applicants	t
1..................	3.87	3.45	3.57**
2..................	2.90	2.52	3.44**
3..................	3.46	2.99	4.09**
4..................	3.62	3.22	3.54**
5..................	3.04	2.51	5.14**

** $p < .01$.

educated than renewal applicants. Overall, 19% of the original applicants obtained failing grades on DMV test forms compared to 13% for renewal applicants.

A comparison was made between item difficulties for original and renewal applicants. Item difficulties are presented as percents, so a difficulty of 90 indicates 90% of the subjects selected the correct response.

For renewal applicants, the mean difficulty of those HSRI items selected for final renewal applicant forms (Forms 25-30) was 83 and the mean difficulty of DMV items was 91. For original applicants, the mean difficulty of those HSRI items selected for final original applicant forms (Forms 31-35) was 78 and the mean difficulty of DMV items was 89. These results indicate that DMV items were easier than selected HSRI items for original and renewal applicants. Further, renewal applicants tended to select the correct answer more often than original applicants on both DMV and HSRI items.

The set of items with the largest mean difficulty differences for original compared to renewal applicants are presented in Table 18. A large number of items had statistically significant difficulty differences. So only items with difficulty differences 10% or greater are listed in Table 18. Response distributions were averaged for items administered more than once to renewal applicants. Only one DMV item had a difficulty difference of 10% or greater for original compared to renewal applicants, whereas 11 HSRI items had difficulty differences of 10% or greater. Only one item in Table 18, number 500, was more difficult for renewal applicants than original applicants. Original applicants appeared to be less defensive and demonstrated poorer knowledge of brakes and braking.

Item Results

In Appendix A, complete item statistics are presented for each HSRI item selected. In Appendix B, complete item statistics are presented for all California DMV items. The statistics presented include the following: the pilot number from which the item statistics were gathered, the number of subjects on which the statistics are based, the subject response distribution which indicates item difficulty, and correlations of item response with total score and all driving record and biographical data variables.

The following general item results are presented here. An analysis was

TABLE 16

TEST ITEM AND RESPONSE DISTRIBUTION BY ORIGINAL VERSUS RENEWAL STATUS

(Only those items with difficulty level differences greater than 10 percent)

Item	Response distribution	
	Original applicants	Renewal applicants
44.* A yellow painted curb means that stopping or parking is permitted only for:		
a. Buses as a loading zone ☐	16	10
b. Loading or unloading freight or passengers ☐	76	87
c. Emergency and police vehicles ☐	07	03
108. If at an intersection you see a vehicle coming from the left you should:		
a. Prepare to stop and yield the right-of-way if necessary ☐	78	89
b. Continue at the same speed, since you have the right-of-way ☐	13	07
c. Move as far to the right as possible and maintain your speed ☐	09	04
200. When making a right turn you should always:		
a. Check the road that you are turning onto for vehicles ☐	47	64
b. Signal several blocks before the turn ☐	08	10
c. Stop and check traffic before turning ☐	45	26
244. For best control on a steep downgrade you should begin to slow down:		
a. Just after starting downhill ☐	28	18
b. Before starting downhill ☐	67	81
c. About halfway down the hill ☐	04	01
303. If you can see far ahead you may:		
a. Drive above the speed limit ☐	09	06
b. Drive on the shoulder of the road ☐	09	03
c. Pass several vehicles at once ☐	80	91
354. When driving on a slippery road you should:		
a. Hit your brakes harder to stop ☐	01	00
b. Not make quick turns ☐	63	78
c. Slow down and stop at every intersection ☐	35	21
358. You should be most careful when turning or stopping:		
a. After it has been raining all day ☐	34	28
b. A half hour after it stops raining ☐	06	03
c. During the first half hour of rain ☐	59	69
500.N If you are entering a freeway and there is no break in the traffic:		
a. Slow down at the beginning of the acceleration lane but avoid stopping ☐	73	61
b. Stop at the beginning of the acceleration lane ☐	23	38
c. Continue as you would if there were a break and hope that one appears ☐	03	01
502.N When you enter a freeway from an acceleration lane you should be driving at:		
a. The legal speed limit on the freeway ☐	28	15
b. About the same speed as the vehicle you want to enter behind ☐	56	66
c. About 10 mph below the legal speed limit on the freeway ☐	16	19
512. When passing a car that is driving behind a slower moving vehicle, you should:		
a. Pass on the right, if possible ☐	16	08
b. Be careful because the other car may cut in front of you ☐	78	90
c. Go 5 to 10 mph above the posted speed limit ☐	06	02
565. Generally you should drive:		
a. Just to the left of the center line ☐	10	06
b. As near as possible to the center line ☐	24	15
c. Well to the right of the center line ☐	65	79
711. If your vehicle pulls to one side when the brakes are applied you should:		
a. Have your brakes checked ☐	63	84
b. Balance your wheels ☐	29	15
c. Put more air in the tires on that side ☐	07	02

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*New item.

made of the distribution of accident and conviction correlations for DMV items, and for HSRI items from Pilots 1 and 2, which included all HSRI items analyzed in this study. Cross-validation was made of accident and conviction correlations for those HSRI items selected for final test forms.

An examination was made of the distribution of item-accident and item-conviction correlations for all 74 DMV items, using data from Pilots 1, 3, and 4. DMV items had a mean item-accident correlation of .013 and a standard deviation of .028. There were 19 significant item-accident correlations; 17 were positive and 2 negative. DMV items had a mean item-conviction correlation of .026 and a standard deviation of .039. There were 30 significant item-conviction correlations; 27 were positive and 3 negative.

An examination was made of the distribution of item-accident correlations and item-conviction correlations for all 563 HSRI items selected from the HSRI item pool, using data from Pilots 1 and 2. The distribution of item-accident correlations appeared normal, with a mean correlation of .00 and a standard deviation of .03. There were 50 significant item-accident correlations; 27 were positive and 23 negative. Item-conviction correlations also appeared normally distributed, with a mean correlation of .00 and a standard deviation of .04. There were 89 significant item-conviction correlations; 41 were positive and 48 negative.

One hundred and one of the HSRI items used in Pilots 1 and 2 were selected for use on the final test forms, and each item had a correlation with accidents of at least .01. The mean item-accident correlation of this set of items was .035, and 17 items had positive item-accident correlations that were significant. After cross-validation from Pilot 3, only one item had a negative item-accident correlation that was significant, whereas 13 items had positive item-accident correlations that were significant. The mean item-accident correlation, upon cross-validation, for this set of 101 HSRI items was .019.

Earlier research has demonstrated that previous convictions are a better predictor of subsequent accidents than previous accidents (Peck, McBride, & Coppin, 1971). It might be that to create a test to predict future accidents, the better criterion to use in selecting items would be item correlations with previous convictions rather than with previous accidents. The correlation between accidents and convictions, from Table 3, was .28. A matrix of item-accident by item-conviction correlations was created to examine the number of items that would be selected using either an accident or a conviction criterion. All items that were selected for the final test forms and a correlation of .01 or greater with accidents. Item statistics for all 563 HSRI items, with data from Pilots 1 and 2, were analyzed. A total of 233 HSRI items had a correlation with accidents of .01 or greater, and 234 HSRI items had a correlation with convictions of .01 or greater. One hundred thirty-seven items had a correlation of .01 or greater with both accidents and convictions. So 58% of the items that would have been selected using correlations with accidents as the criterion would have also been selected with convictions as the criterion.

Many of the same items would be selected using either a prior accident or conviction criterion. Because only prior driving record was obtained, no analysis was possible to evaluate which item selection criterion results in a more predictive test.

DISCUSSION

This study was conducted to evaluate a large sample of test items created at HSRI. There was an analysis made of the current California DMV written test, and an attempt was made to create several improved test forms.

The primary purpose of this study was to evaluate a large sample of HSRI items, because many of these items covered subject areas not tested by California DMV items. Unlike the DMV items, these HSRI items were based on a task analysis and appeared to be a promising source of new accident related content for the DMV written tests. An evaluation of the DMV written test had not been previously attempted, and was needed both to determine the adequacy of DMV test forms and to provide for comparisons between HSRI and DMV items.

The use of driving record variables as test evaluation criteria places severe limitations on the magnitude of test and item validity coefficients. This is true because accidents and convictions on record represent relatively rare occurrences and are highly dependent on the behavior of other people and various random contingencies. As such, they are not a direct measure of an individual's driving behavior. Further, a driver's knowledge of laws and safe driving practices is but one factor in his driving performance. So it is likely that very weak relationships are all that can be expected between driving knowledge and accidents and convictions on record. For all correlations with driving record, the maximum value attainable for r is not one, but is a much lower figure due to the highly skewed distribution and restricted range of the criterion (Peck, McBride, & Coppin, 1971).

Drivers licensing tests that have been validated from other states have shown low magnitude correlations with driving record variables. But most drivers licensing tests were created to be achievement tests, not to predict driving record. They are used to test knowledge of vehicle registration laws, financial responsibility, and other topics not directly related to the driver's task. Written drivers licensing tests are also used to keep drivers current in the knowledge of laws related to driving. Some tests that have been validated from other states had poor internal characteristics, such as virtually one choice "multiple choice" test items, and non-equivalent test forms.

DMV Test Forms

DMV forms demonstrated many of the same internal characteristics as were found for written knowledge tests from other states. DMV forms were widely different in difficulty, and had many extremely easy items. Test form reliability measures were moderate. DMV forms, like all forms analyzed, were most highly related to applicants' education, although education was not significantly related to accidents or convictions. DMV test form correlations with driving record variables were all positive, and 15 out of 20 driving record correlations were significant, indicating that applicants with better driving records obtained higher test scores than applicants with worse records.

Dreyer (1975) presented data for original applicants who were administered DMV Forms 1-5, and the results indicated a significant correlation between one year subsequent accidents and test scores on DMV forms combined. Original applicants who obtained higher test scores had better subsequent driving records.

Initial HSRI Test Forms

Initial forms were created from items that were selected during the first screening of the HSRI item pool. They were primarily created to gather data on a large sample of HSRI items, so that the "best" HSRI items could be selected for final test forms. Scores on these forms were more highly related to renewal applicants' sex, age, education, and annual mileage than DMV forms. These initial HSRI forms also tended to be less related to driving record variables than DMV forms. There were no apparent content commonalities among those items significantly correlated with accidents versus uncorrelated items.

There was a comparison made between random and rater item selection. Forms with items selected from the HSRI item pool by research analysts were not more highly correlated with biographical or driving record variables than forms with HSRI items selected at random from the remaining items in the pool. So it appears that the process of screening the lengthy item pool for accident related items, with no validation data to assist such a search, may not be an effective item selection procedure.

Final Test Forms

The final new test forms used in this study were created for use as treatments in a future DMV testing experiment. The rationale for the item selection and test form construction procedures was the following. If drivers with accidents or convictions on record demonstrate poorer knowledge of particular driving facts and situations, then an effective traffic safety treatment might be to administer test forms covering this information. Items with the maximum possible correlations with accidents were therefore selected for these new test forms. The final 45-item and 20-item forms, that were largely composed of HSRI items, did not significantly differ from DMV forms in correlation with driver record variables, although they were more related to education and annual mileage.

HSRI and DMV Form Differences

The results indicated that forms with HSRI items were more related to applicants' biographical variables than were DMV forms, but were no more related to driving record variables. Several explanations are presented here to account for these results.

There were several differences between HSRI and DMV items that may account for their differences in correlations. The first is the difficulty of DMV items compared to HSRI items. DMV items tended to be fairly easy, and many DMV items therefore had very small variance and reduced ability to discriminate between groups. HSRI items were substantially more difficult and therefore had greater variance and would have been more able to detect any true differences between groups with different biographical characteristics and driving records.

The answers to all DMV items and several practice questions are presented in the California Driver's Handbook. DMV tests and test items have been in use for a number of years. Items that are particularly confusing create operational problems and are revised. Most renewal applicants were familiar with DMV tests and the vehicle code summary, but were not familiar with many of the HSRI items, both because these items were new and because no new handbook was created to present the new information. This may partially explain why HSRI items were more difficult than DMV items for all license applicants.

The preceding reasons are also offered as an explanation for the differences in education correlations. The fact that a vehicle code summary was available may have reduced the education correlation for renewal applicants that were administered a DMV test, by allowing less educated subjects to study and memorize correct item responses.

It is possible that HSRI items were written in more difficult language or tested conceptually more difficult material that subjects with less education had difficulty comprehending. No readability study was attempted on any items or tests. HSRI items may have been somewhat perplexing to all applicants, but those with greater education were possibly more "test wise" and could more easily select the correct answers and eliminate incorrect answers.

Possibly drivers who have better driving records are more conscientious about reviewing the vehicle code summary than drivers with worse records, and would demonstrate better knowledge of any type of information that was required knowledge for a drivers license.

DMV test forms had a different appearance than new test forms. DMV forms were printed on long, narrow paper. New forms were printed on standard size paper. Subjects could immediately recognize that they were receiving a new type of test, and this may have raised anxieties among certain subjects that could have affected test performance.

The author made an attempt to improve three sets of DMV and HSRI items by trying to rewrite them in simpler, more concise language, and by making them conform to commonly suggested item writing guidelines. Improvements anticipated were reduced biographical variable correlations. There was no significant effect on test form correlations with driving record variables. Rewritten forms were not less related to education or any other biographical variable. There was no consistent effect on test form difficulty, as two forms were made more difficult and one less difficult as a result of the rewriting effort. But this is not conclusive evidence that items cannot be improved by rewriting.

Original and Renewal Applicant Differences

Original applicants scored significantly lower on DMV forms than renewal applicants, and also found HSRI items on the whole more difficult. Some mention should be made about the purpose of testing for original compared to renewal applicants. It is possible that tests of driver knowledge should be different in nature for original applicants than for renewal applicants. The results from this study indicate that renewal applicants had a better knowledge of both DMV and HSRI items, even though neither original nor renewal applicants had an opportunity to study the HSRI items beforehand. It may be that the best use of both applicant and field office personnel time would be to reduce the amount of time spent testing renewal applicants, or at least those renewal applicants who have demonstrated accident-free driving ability. For renewal applicants, a brief educational experience may be a more effective traffic safety treatment than a pass-fail test. These possibilities will be explored by the California DMV in an upcoming experiment.

Data Collection

Biographical data for each subject was self-reported. Certain errors and reporting biases can occur in data that is self-reported. It is possible, in reporting education level, that subjects tended to overestimate the amount of education they had completed. In Pilots 1-4, over half of the renewal applicants reported "some college" or "college graduate."

Mileage driven in only the past year, even if reported accurately, might not have been an accurate estimate of annual mileage over the past six years. It should be recalled that a six year driving record was analyzed. Further, the mileage estimate for the past year may not have been an accurate estimate even for that year. Certain subject groups might have been inclined to over or under estimate mileage driven.

Conclusion

The final test forms, created primarily with HSRI items, differed from DMV forms only in their correlations with certain biographical variables. They were equivalent in their relationship to prior driving record variables. Whether these final tests are superior traffic safety treatments or driving record predictors remains to be experimentally evaluated. The evaluation must consist of a random assignment of subjects to different testing processes, and a comparison made of subsequent driving records.

Because of moderate test form correlations with education, a special burden is placed on renewal applicants who have little education completed and yet are accident-free drivers. Many of these applicants fail and must return to a field office to be retested. It is likely that applicants with little education have difficulty with the language and verbal concepts presented in a written test. This, together with lack of knowledge, is perhaps the reason for their high failure rate. It might prove to be a formidable task to create written test items that are moderately difficult, and thereby have acceptable measuring characteristics, but are more related to driving record and less related to education. Possibly a testing process where nearly all applicants could receive their drivers license in one field office visit, with a traffic safety treatment given after the initial test failure, would be a more efficient use of field office and applicant time. Possibly audio-visual tests would prove to be a better approach to driver knowledge testing. The California Department of Motor Vehicles is currently examining this approach.

This study has succeeded in indicating several improvements that should be made in the current DMV tests, and has provided data to assist in carrying out these improvements. A large number of HSRI items have been validated and are available for future DMV test form revisions. The appendices contain a large pool of items and a large number of item statistics for each item, including cross-validation data for many items. This should prove to be a valuable source of information for individuals involved in driver knowledge test construction.

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APPENDICES

APPENDIX A

UNIVERSITY OF MICHIGAN HSRI ITEM STATISTICS

This appendix contains the results of an item analysis made on each item selected for use in this study from the University of Michigan HSRI item pool. The table presenting HSRI item statistics is divided into 13 columns, and the data presented is as follows:

1. Number and Item - Each item in the HSRI passenger car item pool was designated a number by HSRI, from 1 to 1,313, (Berger-et al, 1972). All HSRI items that were selected for use in this study appear in Appendix A, and retain their HSRI designated numbers. An M following any HSRI number indicates that the item was modified; that is, rewritten or substantially altered. No M indicates that the item was unaltered from the way it appeared in the HSRI passenger car item pool, except that the four multiple choice answers were reduced to three by usually eliminating the answer chosen least often by the HSRI subject sample.

2. Pilot Number - Five test form pilots were conducted, and each used a different set of test forms that were administered at a different set of field offices. The following is a brief summary of relevant details for each pilot.

   Applicants who were renewing their California drivers license were tested in Pilots 1-4. Original applicants, those who were applying for their first California drivers license, were tested in Pilot 5.

   HSRI items were selected from the HSRI item pool to create test forms for Pilots 1 and 2. There were 12 forms, each containing 25 items, created for Pilot 1. A different set of items was selected from the item pool for Pilot 2, and 12 additional 25-item forms were created. The set of items with the highest possible relationship to accidents was selected from the set of all items used in Pilots 1 and 2, and 11 additional test forms were created with these selected items for Pilots 3-5. Cross-validation of item statistics was thereby available for a set of 101 HSRI items.

3. Number of Subjects - The number of subjects that were administered a test form containing each item is presented. Due to missing data for some subjects, item correlations with driving record and biographical variables may be based on a slightly smaller number of subjects than the subject number presented. Refer to Table 1 in the Results Section for the number of subjects for whom data was not available for each driving record or biographical variable.

4. Response Distribution - The percentage distribution of subjects responding to each multiple choice answer for each item is presented. The percentage corresponding to the correct answer is underlined. On the average, less than 1% of applicants indicated no answer choice on each item. This, together with rounding error, accounts for some response distributions adding to less than 100.

Item-Correlation Coefficients

All item-correlation coefficients were rounded to two digits, and decimal points were omitted. The number of subjects per HSRI item ranged from 938 to 1,171. A correlation that was significantly different than zero, therefore, ranged from .057 for a subject number of 1,171, to .064 for a subject number of 938. Because all correlations were rounded to two digits, a correlation of .06 or above in absolute magnitude may be considered significant. Due to rounding, some correlations that failed to reach significance by a small margin may be considered significant.

Approximately a prior six year driving record was analyzed, although driving record was shorter or longer than six years for some applicants. If N/A appears in place of a correlation, that correlation was not available. For original applicants (Pilot 5), all item-correlations with accidents, accident rate, convictions, and conviction rate were not available because no usable California driving record was available. Conviction rate was not calculated for Pilots 1 and 2.

5. Total Test Score - This is the correlation between correct or incorrect item response and the total number wrong. A positive correlation indicates that subjects who selected the correct answer tended to have higher total test scores than subjects who selected an incorrect answer. These correlations might be slightly inflated on the shorter test forms, because each item was not removed from the total score for its item-total test score correlation. Lengths of the new test forms were the following. For Pilots 1 and 2, 25-item tests were created. For Pilot 3, 45-item tests were created, and for Pilot 4, 20-item tests were created. All the preceding tests were primarily composed of HSRI items. Pilot 5 used 50-item tests with only the final 14 items being HSRI items.

6. Accidents - This is the correlation coefficient between correct or incorrect item response and subject's accident record. A positive correlation indicates that subjects who selected the correct answer tended to have fewer accidents on record than subjects who selected an incorrect answer.

7. Accident Rate - This is the correlation coefficient between correct or incorrect item response and subject's accident record corrected for exposure with the following formula:

$$\left(\text{Accident rate} = \frac{\text{Accidents}}{\text{Mileage category}}\right)$$

Subjects in the "none" mileage category were deleted. A positive correlation indicates that subjects who selected the correct answer tended to have a lower accident rate than subjects who selected an incorrect answer.

8. Convictions - This is the correlation coefficient between correct or incorrect item response and subject's conviction record. A positive correlation indicates that subjects who selected the correct answer tended to have fewer convictions on record than subjects who selected an incorrect answer.

9. Conviction Rate - This is the correlation coefficient between correct or incorrect item response and subject's conviction record corrected for exposure with the following formula:

$$\text{(Conviction rate} = \frac{\text{Convictions}}{\text{Mileage category}}\text{)}$$

Subjects in the "none" mileage category were deleted. A positive correlation indicates that subjects who selected the correct answer tended to have a lower conviction rate than subjects who selected an incorrect answer.

10. Sex - This is the correlation coefficient between correct or incorrect item response and subject's sex category. A positive correlation indicates that males tended to select the correct answer more often than females.

11. Age - This is the correlation coefficient between correct or incorrect item response and subject's age category. Age categories were: 0 = under 20, 1 = 20-29, 2 = 30-39, 3 = 40-49, 4 = 50-59, and 5 = 60+ years. A positive correlation indicates that younger subjects tended to select the correct answer more often than older subjects.

12. Education - This is the correlation coefficient between correct or incorrect item response and subject's education category. Education categories were: 1 = grammar school, 2 = some high school, 3 = high school graduate, 4 = some college, and 5 = college graduate. A negative correlation indicates that more educated subjects tended to select the correct answer more often than less educated subjects.

13. Mileage - This is the correlation coefficient between correct or incorrect item response and subject's reported annual mileage category. Mileage categories were: 1 = none, 2 = under 1,000 miles, 3 = 1,000-4,999, 4 = 5,000-9,999, 5 = 10,000-14,999, 6 = 15,000-19,999, 7 = 20,000-29,999, 8 = 30,000-49,999, and 9 = 50,000+ miles driven in the past year. A negative correlation indicates that higher mileage subjects tended to select the correct answer more often than lower mileage subjects.

UNIVERSITY OF MICHIGAN H.S.R.I. ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
6. Before starting the engine do all of the following except:	2	1008		41	-02	00	-02	NA	-01	24	-23	-05
a. Make sure all doors are closed and locked			13									
b. Make top of headrest level with your neck			73									
c. Fasten seat belts and shoulder harnesses			14									
7. The inside rearview mirror should be adjusted to reflect the:	1	1077		29	02	03	-01	NA	05	06	-03	-08
a. Left side of the road behind the vehicle			06									
b. Right side of the road behind the vehicle			06									
c. Center of the road behind the vehicle			88									
7. Duplicate of above	3	1078	05 05 90	21	-03	-02	01	-01	06	08	-06	-02
7. Duplicate of above	4	1170	05 06 89	20	01	01	01	01	02	07	-04	00
7. Duplicate of above	5	940	08 09 83	25	NA	NA	NA	NA	03	02	00	-07
8. Before driving you should adjust your left outside mirror so that you:	2	997		39	-01	03	-08	NA	25	15	-16	-15
a. Do not see any part of your vehicle when you are sitting in your normal driving position			16									
b. See the rear window of your vehicle when you are sitting in your normal driving position			05									
c. Just see the left edge of your vehicle when you are sitting in your normal driving position			79									

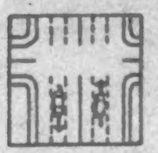
Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
10. The most important reason for keeping loose objects off of the dashboard, floor, and sun visor is that:	2	1008		38	-04	-03	-05	NA	02	31	-20	-06
a. They may blow out of an open window			01									
b. They may interfere with your driving of the vehicle			82									
c. It is illegal to keep loose objects in any of these places			16									
17. If you flood your engine when starting it is best to:	2	978		34	-05	-02	-04	NA	23	-02	05	-09
a. Release the gas pedal entirely while using the starter			38									
b. Hold the gas pedal all the way down while using the starter			56									
c. Pump the gas pedal up and down while using the starter			06									
19. When driving at night rather than during the day it is more important to:	2	978		28	-02	00	-01	NA	-03	07	-12	-07
a. Have the right amount of air in your tires			00									
b. Check your lights and signals			97									
c. Keep an eye on the rearview mirror(s)			03									
20. To prepare for a long trip you should:	2	1008		26	-05	-03	00	NA	13	05	-03	-02
a. Check your route on an up-to-date map			79									
b. Drink several cups of coffee			01									
c. Put your best tires on the rear wheels			20									
21. When taking a long trip you should limit your driving to:	2	1000		22	03	04	02	NA	-02	-05	-10	-05
a. 8 hours a day with several rest stops			86									
b. 12 hours a day with several rest stops			08									
c. 4 hours a day with several rest stops			05									

UNIVERSITY OF MICHIGAN H.S.R.I. ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
21. Duplicate of above	3	1078	82 12 06	21	03	05	09	07	-03	-10	-09	-04
21. Duplicate of above	4	1170	83 10 07	35	02	02	00	03	06	-03	-11	-05
21. Duplicate of above	5	940	77 13 10	20	NA	NA	NA	NA	05	-10	-12	-10
23. When going on a long trip it is most important to: a. Get plenty of rest before starting out b. Have someone else with you in the vehicle c. Keep the radio on	2	985	88 09 03	23	-01	02	-02	NA	08	00	-07	-09
25. Before coming to a point where you have to make a decision you should: a. Look for signs telling you what to do b. Move over to the right lane c. Increase your speed to move away from other vehicles	1	1077	71 28 01	39	03	04	02	NA	-05	06	-14	-03
25. Duplicate of above	3	1078	64 35 00	32	06	05	-03	-03	01	13	-23	-05
25. Duplicate of above	4	1171	66 32 01	39	-03	-03	-05	-04	01	06	-17	-05
25. Duplicate of above	5	938	72 26 02	22	NA	NA	NA	NA	06	06	04	02

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
28. You should downshift: a. For steep hills or poor road conditions b. Whenever possible, to control your speed c. When making emergency stops	2	985	79 19 02	29	03	04	06	NA	02	-07	-09	-02
29. When driving on a road having several lanes in each direction you should generally: a. Drive in the far left lane b. Use the right lane(s) to pass c. Stay in the center of your lane	1	1072	03 03 94	26	04	06	01	NA	04	01	-10	-06
29. Duplicate of above	3	1078	05 06 88	38	-03	01	03	07	07	00	-18	-09
29. Duplicate of above	5	938	08 08 84	31	NA	NA	NA	NA	04	-06	-14	-05
30. If there are no painted lines on the road you: a. May drive anywhere on your side of the road b. Should drive wherever traffic is moving the fastest c. Should drive as if there were lines	1	1080	06 01 93	22	04	04	03	NA	-07	06	-03	-03
30. Duplicate of above	3	1050	03 01 96	19	00	-02	03	02	-05	05	-09	01
30. Duplicate of above	4	1168	03 01 96	20	04	02	07	07	-08	05	-04	-01

UNIVERSITY OF MICHIGAN H.S.R.I. ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
31. You should drive in the right lane of a 6-lane highway when:	1	1072		19	-02	[illegible]	00	NA	02	01	-11	05
a. Driving slower than the traffic in the other lanes			98									
b. When you see traffic entering the highway from the right			00									
c. You want to pass other vehicles on the highway			02									
32. On this 6-lane road these 2 lanes should be used by: 	1	1080		35	-05	-03	-04	NA	00	10	-19	-10
a. Through traffic			87									
b. Trucks and bus traffic			04									
c. Slow moving traffic			09									
33.N When driving you should stay at least:	1	1075		06	-01	-01	01	NA	08	00	-07	-04
a. 1 second behind the vehicle in front of you			04									
b. 3 seconds behind the vehicle in front of you			88									
c. 2 seconds behind the vehicle in front of you			08									
34. When following a vehicle that blocks your view of the road ahead:	2	993		37	-03	00	-01	NA	04	07	-15	-06
a. Stay as far to the right as possible			03									
b. Follow at a greater distance than usual			92									
c. Drive so that you are in the far left side of the lane			05									
35. The most important reason for passing a truck traveling at 45 MPH in a 55 MPH zone is:	2	998		35	01	02	00	NA	04	10	-17	-11
a. To improve your ability to see			85									
b. To advance your position in traffic			13									
c. To reduce your travel time			02									

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
36. You need not leave more room than usual between you and the vehicle ahead when: a. In heavy fog b. Following large trucks or busses c. In slow-moving city traffic	1	1075	04 06 89	36	01	-01	07	NA	08	00	-16	-02
37. When following vehicles which often stop (busses, post office vans): a. Allow more following distance than usual b. Do not pass; wait until they turn off the road c. Blow your horn to warn them that you are following	1	1075	88 11 01	39	00	02	-01	NA	06	04	-13	-08
37. Duplicate of above	3	1061	89 10 00	42	03	04	01	05	11	03	-19	-12
37. Duplicate of above	5	938	88 11 01	42	NA	NA	NA	NA	05	04	-08	-07
38. When driving behind a motorcycle you should: a. Increase your following distance b. Drive in the left part of the lane c. Wait for a hand signal before you pass	1	1075	58 20 21	52	-01	04	-01	NA	19	18	-31	-16
39. When driving at night or when visibility is poor: a. Drive slightly faster than during the day b. Do not follow as closely as you do during the day c. Do not look as far ahead as you do during the day	1	1075	00 95 04	22	-01	01	05	NA	02	-07	-10	02

UNIVERSITY OF MICHIGAN H.S.R.I. ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
40. Where traffic enters or crosses the road: a. Speed up to pass that area quickly b. Change lanes and pass the vehicle in front of you c. Increase the distance between you and the vehicle ahead	1	1075	04 04 91	38	-01	00	05	NA	05	08	-17	00
41. At hills and valleys in a freeway, most rear end accidents are caused by: a. Poor brakes b. Vehicles trying to pass c. Following too closely	1	1075	02 06 92	36	06	05	08	NA	02	-03	-14	-05
41. Duplicate of above	3	1078	01 06 92	23	01	02	00	00	-02	00	-11	00
41. Duplicate of above	4	1170	02 06 91	30	00	00	05	07	02	-04	-03	-02
41. Duplicate of above	5	954	05 08 87	26	NA	NA	NA	NA	06	-05	-06	-06
42. In order to make smooth, safe stops you should: a. Drive slower than other traffic b. Keep one foot on the brake c. Watch the vehicle ahead for signs that it is slowing down	1	1072	03 02 95	24	-03	-02	01	NA	04	07	-10	-06

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
43. If the vehicle just ahead of you slows down, you should: a. Slow down b. Quickly change lanes and pass c. Pull alongside and see what the trouble is	2	991	99 00 00	17	03	03	-02	NA	01	00	-03	-03
44. The first thing to do if the vehicle in front signals or puts on its brakes is: a. Slow down b. Change lanes c. Pass him	1	1072	100 00 00	15	-03	-02	01	NA	02	-02	-04	-02
45. If the vehicle in front of you slows down you should not: a. Tap the brake lightly to warn drivers behind you b. Take your foot off the gas pedal c. Signal other drivers to pass	2	1002	11 04 85	43	-06	-05	-04	NA	02	22	-19	-07
46. If the vehicle in front of you stops you should: a. Speed up and pass the stopped vehicle b. Put your car in neutral to slow down c. Apply your brakes and be prepared to stop	1	1077	00 00 99	09	-03	-02	-04	NA	02	06	-06	-05
46. If the vehicle in front of you stops you should: a. Speed up and pass the stopped vehicle b. Apply your brakes and be prepared to stop c. Put your car in neutral and slow down	1	1080	00 99 00	17	00	01	-06	NA	-02	10	-12	-07
47.M When the vehicle in front of you is turning, you should: a. Change lanes and pass the turning vehicle b. See if the turn can be safely made c. Increase your speed slightly	1	1072	35 63 01	09	-03	-02	00	NA	04	-21	04	-03

UNIVERSITY OF MICHIGAN H.S.R.I. ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
48. If the vehicle in front of you stops and you have to stop behind it, you should generally: a. Put on your emergency flashers if you come to a stop on the road b. Stop a safe distance away and then move as close to the vehicle in front as possible c. Stop far enough in back of him so that you can change lanes if necessary	1	1072	19 05 76	17	01	02	00	NA	-09	07	01	00
48. Duplicate of above	3	1058	15 07 78	15	01	-02	05	00	-11	19	-02	09
48. Duplicate of above	5	940	11 10 79	13	NA	NA	NA	NA	-08	07	11	11
49. At intersections with no traffic controls you should expect the vehicle in front of you to: a. Slow down b. Speed up c. Stop	2	998	74 00 26	28	-01	03	02	NA	00	-11	-12	-03
50. When driving behind another vehicle on an entrance to a highway you should: a. Not go faster than 20 MPH b. Be prepared for the other vehicle to slow down c. Use the left shoulder to pass if the other vehicle is going too slow	1	1075	08 90 02	37	02	05	-02	NA	11	10	-08	-07
50. Duplicate of above	3	1061	04 93 03	37	00	01	00	03	11	05	-21	-12

UNIVERSITY OF MICHIGAN N.S.R.T. ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
51. If a freeway entrance is not long enough to permit you to reach freeway speeds:	1	1075		37	-06	-05	-04	NA	10	16	-13	-06
a. Stop before entering the freeway			54									
b. Sound your horn before entering the freeway			04									
c. Expect other vehicles on the entrance in front to slow down			42									
51. Duplicate of above	2	998		41	-02	00	-06	NA	10	21	-19	-17
			45									
			05									
			50									
52.M When entering a freeway you should expect the vehicle in front of you to:	1	1075		01	-03	-02	00	NA	00	-20	12	-01
a. Slow down before entering the freeway			58									
b. Speed up before entering the freeway			25									
c. Continue at the same speed onto the freeway			17									
53. When coming to a rural intersection where you want to continue straight ahead, you should:	1	1075		51	00	04	03	NA	12	16	-27	-11
a. Speed up so you will not hold up traffic			03									
b. Move into the far right part of your lane			24									
c. Expect the vehicle ahead of you to slow down			72									
54. When you are following a vehicle which is turning from the highway, you should expect it to:	1	1075		38	-02	01	03	NA	13	10	-17	-13
a. Maintain its speed			13									
b. Speed up slightly			02									
c. Slow down quickly			85									
55. When a freeway exit is on the left side of the road you should expect:	1	1075		26	-05	-04	-04	NA	05	13	-08	-05
a. Traffic in the right lane to continue as usual			43									
b. Vehicles to change lanes just before the exit			41									
c. Traffic in the left lane to continue as usual			15									

UNIVERSITY OF MICHIGAN H.S.R.I. ITEM STATISTICS

Number and item		Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
					Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
55.	Duplicate of above	2	985	37 49 14	37	-01	02	00	NA	07	16	-08	-0[illegible]
56.	When behind a vehicle coming to a fork in the road you should expect it to: a. Slow down b. Stop on the road c. Continue at the same speed	2	1005	90 04 06	10	02	03	-02	NA	03	-03	-01	02
56.	Duplicate of above	3	1061	90 04 06	18	-01	-01	06	03	02	-03	-02	-04
56.	Duplicate of above	4	1171	87 03 10	24	-03	-02	-03	-03	05	01	-04	-04
56.	Duplicate of above	5	938	88 05 07	14	NA	NA	NA	NA	06	-06	-06	-07
57.	When hauling a heavy load you should: a. Allow more distance to stop b. Turn more sharply and at higher speeds than usual c. Drive with your high beams on	1	1077	99 00 01	15	-03	-03	05	NA	01	-01	-05	-03
61.	A trailer will sway if its tires are: a. Unevenly inflated b. Radial c. Smaller than those on the towing vehicle	2	991	87 01 12	32	-03	01	-03	NA	17	-05	-00	-07

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
62. If you are carrying packages or other materials	2	998		16	-01	-02	02	NA	-06	05	-04	06
a. Make sure nothing is in the front seat b. Place padding on everything carried in the passenger area c. Be sure you can see out of all of the windows			02 00 98									
64. When you are pulling a trailer it is most important to:	1	1075		58	02	04	-01	NA	20	06	-29	-15
a. Drive at least 15 MPH below the speed limit b. Increase your following distance c. Use your headlights during the day			35 61 05									
65. If you are towing a trailer and want to pass another vehicle you should not:	2	1002		45	-01	01	00	NA	-01	22	-21	-09
a. Check to see if there is room to pass b. Make a wider swing around the vehicle than usual c. Turn sharply when you are changing lanes			13 11 76									
66. Passing another vehicle is different when you are towing a trailer because you:	1	1077		38	-02	02	-02	NA	06	20	-20	-07
a. Cannot pass on a hill b. Need more room to pull back into line c. Do not have to worry about wind gusts			13 86 00									
66. Passing another vehicle is different when towing a trailer because you:	1	1075		44	-01	-02	01	NA	05	20	-14	-02
a. Cannot pass on a hill b. Do not have to worry about wind gusts c. Need more room to pull back into line			11 00 89									

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
67. If you are towing a trailer and a vehicle is passing you:	1	1075		43	03	03	03	NA	09	-06	-16	-05
a. Move over partly onto the shoulder			10									
b. Leave enough space in front of you for him to pull into			61									
c. Signal the passing vehicle when it is safe to pass			29									
67. Duplicate of above	3	1078		31	04	05	04	04	12	-10	-17	-12
			07									
			63									
			29									
68. When you go up a hill while towing a trailer, you should:	1	1080		26	-03	00	-03	NA	04	06	-12	-05
a. Drive in the center lane			00									
b. Travel in the lane with the least traffic			02									
c. Keep in the right lane			98									
70. When pulling a trailer around a sharp left curve:	2	998		29	00	01	03	NA	10	01	00	-03
a. Stay well to the right side of the road			74									
b. Speed up slightly			00									
c. Drive on the inside of the curve			26									
71. When you slow down or stop with a trailer:	1	1077		44	-02	00	-01	NA	12	06	-10	-10
a. Allow less room to stop because of the extra weight			06									
b. Turn on your 4-way flashers			15									
c. Apply the brake off and on, gradually			80									
74. If there are children under 2 years old in your vehicle they should:	2	998		36	01	02	-04	NA	05	00	-11	-10
a. Wear one of the regular seat belts and shoulder harness			18									
b. Lie down in the back seat of the vehicle			01									
c. Be put in a car seat or a car bed			81									

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
75. If there are children in your vehicle it is unsafe to:	2	993		30	04	06	-02	NA	-11	19	-16	-05
a. Lock all the doors before driving			04									
b. Place small children in a car seat or car bed			12									
c. Put one seat belt around several small children			84									
76. In general the best way to hold the steering wheel is:	2	1008		32	01	03	-02	NA	01	07	-10	-04
a. Both hands on the spokes			04									
b. One hand on the rim; the other free to operate the controls			03									
c. Both hands separated and facing inward on the rim			92									
78. When steering your vehicle at high speeds:	1	1064		46	03	06	-04	NA	21	10	-15	-12
a. Pump the brakes when making any steering corrections			13									
b. Hold the steering wheel loosely or let it slip through your hands			09									
c. Small movements of steering wheel cause larger changes in direction			78									
78. Duplicate of above	3	1058	09 08 83	33	-04	-03	01	01	17	01	-14	-11
79.N To stay in the correct position in a lane:	1	1072		36	-04	-01	03	NA	15	01	-19	-15
a. Watch the road 20 to 30 feet in front of your vehicle			22									
b. Keep looking at the right side of the road			03									
c. Look well ahead to the middle of your lane			75									

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
80. When driving on an undivided road, you should: a. Cross the solid double yellow lines to pass slow-moving vehicles b. Drive 5 to 10 MPH below the speed limit c. Keep to the right in the presence of oncoming vehicles	1	1080	01 03 96	36	03	03	02	NA	-02	-06	-09	-01
81. If you know that you will soon be making a turn you should: a. Flash your bright lights to warn other traffic b. Look well ahead to locate the turning point c. Speed up so as to avoid making other vehicles wait	2	991	08 92 00	29	01	02	-02	NA	09	12	-06	-11
81. Duplicate of above	3	1078	08 92 00	27	07	08	-03	-03	05	16	-10	-02
81. Duplicate of above	5	940	13 86 02	32	NA	NA	NA	NA	07	04	-01	-08
82. Before making a turn you should: a. Look to see if other vehicles will be in your way b. Use hand signals first and then mechanical signals c. Move slightly to the left when turning right and slightly to the right when turning left	1	1064	84 15 01	34	06	09	06	NA	03	-06	-14	-05
82. Duplicate of above	3	1061	85 13 02	35	04	05	05	07	07	01	-16	-10

	Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
					Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
82.	Duplicate of above	4	1171	81 18 02	34	02	00	06	03	04	-01	-16	-01
82.	Duplicate of above	5	954	78 19 03	26	NA	NA	NA	NA	06	-18	-18	-19
82.	Duplicate of above	1	1068	80 19 02	39	02	03	14	NA	-07	05	-20	-01
83.	When moving into the left lane you should first: a. Check on your blind spot b. Put on your turn signal c. Move to the left of your lane	2	888	22 75 02	30	-01	-02	03	NA	01	-03	-03	05
83.	When moving into the left lane you should first: a. Put on your turn signal b. Check your blind spot c. Move to the left of your lane	1	1072	74 26 01	24	03	04	02	NA	03	-01	-04	-01
84.	You should slow down for a right or left turn: a. A couple of blocks before you have to turn b. Before you signal for the turn c. Before you begin turning the steering wheel	1	1076	08 48 43	46	01	03	01	NA	09	20	-22	-03
85.	If you have to shift gears when making a turn in a manual shift vehicle: a. Shift to lower gear during turn b. Shift to lower gear before turn c. Shift to lower gear after turn	1	1080	04 92 03	17	03	02	-03	NA	09	-04	-06	-04

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
87. When turning the steering wheel, turn with:	2	1005		11	-01	00	06	NA	-02	-01	-10	-06
a. 2 hands on the rim			99									
b. 1 hand on the rim			01									
c. 2 hands on the spokes			00									
88. When making a sharp turn you should:	1	1064		38	-01	-02	-01	NA	04	14	-13	-01
a. Keep both hands near the bottom of the steering wheel and turn the wheel by moving it from hand to hand			20									
b. Turn the wheel with one hand and then grasp it near the top with the other hand and turn it			68									
c. Keep both hands on the inside of the steering wheel rim with your palms facing out			12									
89. For a smooth turn you should start straightening the wheels:	1	1064		18	04	05	02	NA	09	02	-05	-06
a. Just as you are heading in the direction you want to go			28									
b. Gradually throughout the entire turn			57									
c. Before you are heading in the direction you want to go			15									
90. If your vehicle has power steering, you should:	1	1064		29	03	04	00	NA	07	00	-04	-04
a. Let the steering wheel slip through your hands when braking			06									
b. Turn the steering wheel more sharply when making steering adjustments at higher speeds			03									
c. Not let the steering wheel slip through your hands when turning			91									

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
91. When letting the steering wheel slip back through your hands after turning:	1	1076		23	05	03	08	NA	01	01	-11	-04
a. Be ready to grab it to control the rate of turning			54									
b. Let it completely unwind before grasping it			11									
c. Stop it several times to keep it under control			33									
92. After making a turn you should:	1	1072		32	01	03	05	NA	00	11	-14	-03
a. Slow down to get your bearing			16									
b. Get back up to your normal speed			82									
c. Speed up quickly and move into the left lane			01									
92. Duplicate of above	3	1058	16 83 01	19	00	06	09	10	-02	05	-06	-04
92. Duplicate of above	5	940	12 85 02	32	NA	NA	NA	NA	-05	13	07	08
95. When starting to drive on snow or any slippery surface:	2	998		10	00	03	-01	NA	05	01	00	00
a. Pump the gas pedal			01									
b. Spin the tires to see how slippery it is			00									
c. Test brakes lightly to get a feel for the road			98									
96. To avoid spinning the tires on a slippery surface you should:	1	1072		38	-06	-07	-05	NA	16	06	-11	-08
a. Alternately use the brake and gas			11									
b. Shift from drive to neutral			04									
c. Increase speed slowly			84									

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
98. You should drive: a. At the posted speed limit b. About 5 mph below the speed limit c. According to the road and weather conditions	1	1072	22 02 76	52	05	08	10	NA	02	-11	-19	-05
98. Duplicate of above	3	1078	17 01 82	43	02	01	11	13	-02	-07	-20	-06
98. Duplicate of above	4	1170	18 01 80	43	-01	00	05	07	03	-01	-10	-04
98. Duplicate of above	5	938	24 02 73	46	NA	NA	NA	NA	10	-01	-10	-06
99. You should generally select a speed which: a. Is at least 5 mph below the posted speed limit b. Is not more than 5 mph above the posted speed limit c. Is about the average speed of traffic	1	1075	13 09 78	35	04	04	02	NA	08	06	-18	-06
99. Duplicate of above	3	1061	15 13 72	32	-06	01	00	06	09	09	-15	-09
99. Duplicate of above	5	940	14 12 73	31	NA	NA	NA	NA	-01	-01	-04	00

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
99. You should generally select a speed which:	2	1013		29	01	02	00	NA	04	10	-11	-03
a. Is at least 5 MPH below the posted speed limit			11									
b. Is about the average speed of traffic			82									
c. Is not more than 5 MPH above the posted speed limit			07									
100. When driving it is most important to frequently check your:	2	993		20	-05	-06	-04	NA	-01	06	-06	-04
a. Speedometer			96									
b. Oil pressure			01									
c. Engine temperature			02									
101. If there is a change in the legal speed limit, you should first:	1	1075		38	-08	-07	01	NA	06	08	-15	-03
a. Slow down and proceed cautiously			40									
b. Look in your rearview mirror			04									
c. Check your speedometer			55									
101. If there is a change in the legal speed limit, you should first:	2	1002		29	03	04	01	NA	10	01	-14	-05
a. Check your speedometer			56									
b. Slow down and proceed cautiously			39									
c. Look in your rearview mirror			05									
102.M When you leave a highway you should check your speed frequently because you may be:	2	997		14	-02	-03	-05	NA	03	06	-09	-02
a. Suffering from highway hypnosis			14									
b. Driving too fast			83									
c. Driving under the speed limit			02									
103. When slowing down you should not:	1	1075		51	02	02	02	NA	02	17	-27	-06
a. Shift into a lower gear			09									
b. Coast with the gearshift in the neutral position			74									
c. Remove your hand from the wheel to signal following vehicles			17									

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
103. Duplicate of above	3	1058	06 83 12	42	03	07	15	17	-02	09	-18	-07
103. Duplicate of above	5	926	07 74 19	39	NA	NA	NA	NA	00	-03	-11	-12
103. When slowing down you should not: a. Shift to a lower gear b. Remove your hand from the wheel to signal following vehicles c. Coast with the gearshift in the neutral position	1	1077	06 15 79	38	-01	01	07	NA	-02	06	-23	-06
104. It is unsafe to coast in neutral because: a. You lose power from your power steering and brakes b. The engine cannot act as a brake to slow you down c. The engine may stall and you will lose control of the vehicle	2	985	10 68 22	42	-01	02	02	NA	19	04	-12	-07
105. Before you step on the brake to stop, you should: a. Look to the right and left b. Keep pressure on the gas pedal c. Check the rearview mirror	1	1077	08 01 90	36	-03	00	-02	NA	05	08	-12	-06
106. To react, think, and apply brakes under good conditions, it takes the average driver: a. 1/10 of 1 second b. 3/4 of 1 second c. 2 seconds	1	1077	24 40 36	31	-01	-01	-01	NA	10	08	-09	-09

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
107. When preparing to stop you should:	2	978		33	-04	-03	02	NA	05	08	-09	-03
a. Take your foot off the gas pedal and put it on the floor until you are ready to apply the brakes			14									
b. Take your foot off the gas pedal and rest it near the middle of the brake pedal			81									
c. Keep one foot on the parking brake in case your regular brakes fail			04									
108. Power brakes:	1	1077		26	00	-01	01	NA	03	-03	-05	-05
a. Give the driver a better "feel" for the road			02									
b. Should be applied very carefully			95									
c. Are particularly helpful on wet or icy pavement			03									
110. In stopping you should use the clutch when:	1	1077		34	00	01	-05	NA	08	16	-14	-06
a. The vehicle is completely stopped			30									
b. Slow speed places a strain on the engine			58									
c. In neutral and stopped on a hill			11									
112. If you are driving at a slow speed in first or second gear and want to stop, use the:	1	1077		06	07	03	05	NA	-09	-01	05	09
a. Clutch first and later the brake			24									
b. Brake first and later the clutch			46									
c. Brake and clutch at the same time			29									
114. When you stop in traffic going uphill you should:	1	1068		29	-01	00	-07	NA	07	18	-14	-11
a. Put your parking brake on			24									
b. Put the vehicle in neutral and put on your brakes			12									
c. Allow more room between you and the vehicle in front of you			63									

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Number and item		Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
					Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
115.	To avoid being pushed into the vehicle in front of you when stopped:	1	1068		27	-03	-02	-06	NA	01	12	-09	-06
	a. Leave room between you and the vehicle in front			83									
	b. Turn your wheels toward the curb			08									
	c. Keep flashing your brake lights so that the other vehicle will see you			08									
116.	After you come to a stop and are waiting to continue, you should:	1	1068		27	01	01	-01	NA	09	05	-16	-04
	a. Keep in slight motion by gently pressing gas			07									
	b. Maintain firm pressure on the brake			91									
	c. Shift to neutral and gently press gas			02									
116.	Duplicate of above	3	1061		36	02	03	-03	-01	12	03	-18	-08
				06									
				90									
				04									
116.	Duplicate of above	5	926		33	NA	NA	NA	NA	12	-12	-15	-16
				18									
				78									
				04									
119.	If you must make a quick stop you should:	2	998		25	00	02	04	NA	06	-02	-03	-01
	a. Apply constant pressure on the brakes			87									
	b. Shift into a lower gear			06									
	c. Turn around and look behind you			07									
120.	If the wheels lock when you brake, you should:	1	1068		36	03	04	03	NA	05	03	-13	-03
	a. Take your foot off the brake and keep it off			06									
	b. Keep your foot on the brake			04									
	c. Release the brake, then brake more lightly			90									

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
120. Duplicate of above	3	1078	08 02 90	27	04	05	-03	-03	00	00	-06	-03
121. If you double your speed it will take you about: a. 4 times the distance to stop b. 3 times the distance to stop c. 2 times the distance to stop	2	1013	67 12 21	29	04	06	01	NA	03	-07	-17	-06
121. Duplicate of above	3	1078	66 13 20	23	03	05	06	06	02	-16	-11	-05
121. Duplicate of above	4	1170	66 12 21	37	04	06	-03	-02	06	-07	-11	-07
121. Duplicate of above	5	940	59 13 27	26	NA	NA	NA	NA	06	-18	-18	-17
122.R As your speed increases the distance traveled after applying your brakes: a. Becomes less than the distance covered before you apply your brakes b. Becomes greater than the distance covered before you apply your brakes c. Depends on the skill of the driver	1	1072	26 64 08	43	-03	02	-04	NA	05	10	-17	-05
123. In an emergency stop you should not: a. Grasp the steering wheel firmly b. Apply brakes as soon as possible c. Turn off the engine	1	1068	09 18 72	46	-01	04	-01	NA	14	12	-19	-12

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
124. In an emergency stop:	2	991		35	-03	01	-04	NA	16	11	-10	-11
a. Turn off the engine and apply both the foot and parking brakes			39									
b. Apply brakes with a series of short jabs on dry pavement			57									
c. Turn the steering wheel sharply to the left and apply the foot brake			04									
125. If you are driving on a slippery road and have to stop quickly you should:	2	998		39	-02	-02	01	NA	-03	24	-21	-06
a. Keep foot off brake and let the engine stop you			11									
b. Apply brakes in normal manner			26									
c. Pump the brake pedal			63									
127. When driving you should be alert to things:	2	998		29	-01	-01	11	NA	-05	04	-13	03
a. To the front of you			03									
b. To the sides of you			00									
c. All around you			97									
128. As your speed increases it is most important to:	1	1077		27	06	06	06	NA	-02	02	-12	-05
a. Put on your headlights			01									
b. Look farther ahead on the road			97									
c. Drive with one foot on the brake			01									
129. While driving in the city you should generally focus your attention:	1	1068		30	04	03	01	NA	-04	17	-12	-01
a. On the vehicle just in front of you			59									
b. Toward the right side of the street just in front of you			12									
c. One block ahead of you			29									
130. When driving in the country you should:	1	1068		32	-05	-03	-03	NA	09	04	-10	-07
a. Focus 2 or 3 vehicle lengths in front of you			34									
b. Look 1/2 mile or more ahead for problems			30									
c. Look as far as 1 block ahead for problems			35									

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
131. It is unsafe to: a. Look along the left and right side of the road b. Focus on the road just in front of the hood c. Check your controls	2	998	14 77 09	45	03	04	03	NA	01	16	-31	-04
131. Duplicate of above	3	1058	20 68 12	39	00	01	00	-01	03	12	[illegible]	-06
131. Duplicate of above	4	1168	18 71 11	36	00	05	-04	00	-05	10	-18	-03
131. Duplicate of above	5	926	19 72 08	31	NA	NA	NA	NA	00	12	-03	-01
132. In order to be alert to sounds around your vehicle you should: a. Watch for signals from other drivers b. Keep the radio volume down c. Keep a window rolled all the way down	2	1002	15 71 14	30	-03	-01	-06	NA	-02	23	-31	-12
133. When driving you should: a. Look straight ahead to the center of the road and avoid looking to the side b. Spend as much time looking at your mirrors as you do looking in front of you c. Avoid looking at any one thing for more than a few seconds	2	998	07 27 67	42	-05	-02	-03	NA	12	13	-13	-10

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
134. When driving in a city you should:	2	1005		48	-03	-02	-04	NA	13	07	-24	-11
a. Leave 1 vehicle length or less between you and the vehicle ahead			57									
b. Glance only briefly at attention getting events			39									
c. Change lanes as often as necessary in order to keep up your speed			04									
135. In order to avoid being hit in the rear by another vehicle, you should:	1	1077		42	02	07	01	NA	12	03	-15	-05
a. Keep parking lights on at all times			01									
b. Signal several blocks before turning			24									
c. Check your rearview mirrors often			74									
135. Duplicate of above	3	1058	01 20 79	32	00	00	06	04	-02	-04	-12	-02
135. Duplicate of above	4	1168	02 17 81	37	01	05	-02	03	05	02	-11	-07
135. Duplicate of above	5	926	01 21 77	22	NA	NA	NA	NA	02	-03	05	01
136. When driving on a multi-lane road you should:	2	1005		38	02	03	-01	NA	03	20	-20	-09
a. Signal after you start moving into a new lane			05									
b. Watch vehicles in the lanes next to you			60									
c. Use hand signals to show that you are changing lanes			34									

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
137. When driving on a city street you should:	1	1677		16	00	02	-02	NA	03	-02	-07	-01
a. Look for crowds on the sidewalks			02									
b. Check the traffic behind you by quickly turning around			00									
c. Watch for vehicles coming from cross streets			98									
138. When driving in heavy traffic you should be careful of drivers who:	2	987		28	06	12	01	NA	-05	04	-14	-08
a. Change lanes often			96									
b. Maintain a constant, moderate speed			02									
c. Use hand signals			02									
139. When driving in traffic you should:	3	983		30	-06	-03	-03	NA	03	06	-16	-06
a. Change lanes instead of slowing down			02									
b. Avoid using hand signals			01									
c. Watch for drivers that make quick stops			97									
141. In order to drive at a legal speed you should:	2	988		32	02	01	-01	NA	06	14	-14	-05
a. Stay no closer than 4 to 5 vehicle lengths to the vehicle in front of you			17									
b. Make sure you are going within the posted speed limits			81									
c. Keep a steady, even pressure on the gas pedal			01									
142. If you are in a passing zone, you should:	1	1075		49	02	02	02	NA	-02	11	-27	-04
a. Anticipate passing or being passed			75									
b. Signal other vehicles to pass if you are going below the speed limit			16									
c. Continue at same speed and move into the left lane			09									
142. Duplicate of above	3	1078	79 09 11	41	02	05	01	04	03	08	-22	-13

Number and item		Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
143.	The first time you need to check the traffic lights ahead of you is when you:	2	978		40	-01	00	-01	NA	12	05	-13	-11
	a. Are within 50 feet of the lights			23									
	b. See the vehicle in front of you begin to slow down			20									
	c. Are a block or more away from the lights			56									
144.	When driving at night in a city you should:	2	996		39	-01	-01	-05	NA	06	09	-14	-02
	a. Use your parking lights since headlights may "blind" pedestrians			04									
	b. Watch the traffic lights for several blocks ahead of you			90									
	c. Follow closer in order to see better			05									
146.	When driving in traffic you should not:	2	998		40	-04	-02	-09	NA	02	16	-22	-02
	a. Adjust the radio or any other controls			13									
	b. Check your rear and side view mirrors			03									
	c. Be distracted by passengers			84									
147.	While driving you should:	2	1013		20	02	02	03	NA	09	11	-06	-04
	a. Place maps on the seat so you can read them			01									
	b. Look at the road when talking			97									
	c. Not check your dashboard instruments			02									
149.	You should signal for a turn:	2	998		27	02	02	08	NA	-08	02	-12	00
	a. After slowing down for the turn			02									
	b. Only if there is oncoming traffic			00									
	c. Well in advance of the turn			97									
150.	Turn signals are:	1	1064		17	-03	-02	-03	NA	00	11	-08	-07
	a. Not required when turning at a traffic light			01									
	b. Always required for any turn			98									
	c. Not required when pulling into an alley or parking space			00									

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
151. When turning left you should:	1	1064		32	02	03	-02	NA	01	03	-07	-02
a. Signal by extending left arm out with arm bent straight up at elbow			07									
b. Signal by pulling down on the turn signal lever			89									
c. Start slowing down after you begin making the turn			05									
153. The first thing you should do after signalling for a turn is to:	2	998		36	02	02	01	NA	-04	09	-15	-02
a. Check to see if the turn is legal			16									
b. Check the response of other vehicles to your signal			55									
c. Slow down and start your turn			29									
154. It is important to use hand signals when:	1	1077		30	-05	-04	-03	NA	07	09	-06	-02
a. Your lights are covered with snow or mud			80									
b. Near a railroad crossing			04									
c. It is dark or visibility is poor			16									
155. When driving in bright sunlight or near glare from lights, it is important to:	2	1008		36	-03	-03	02	NA	00	12	-10	-01
a. Avoid looking in your rearview mirror			08									
b. Use both mechanical and hand signals			88									
c. Get your eyes used to the light by staring at it			03									
156.M When driving on slippery roads you should:	1	1068		27	03	02	-03	NA	03	01	-08	-03
a. Drive with one foot on the brake			31									
b. Use hand signals when stopping			52									
c. Change speed often			16									
157. When stopping you should give a hand signal:	2	993		29	-04	-02	-04	NA	10	15	01	-04
a. Right after you have applied the brakes			01									
b. Just before applying the brakes or slowing down			58									
c. Several hundred feet before you begin slowing down			41									

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
158. When about to enter traffic from a side street, you need not:	2	998		31	05	06	02	NA	-01	01	-08	01
a. Yield to traffic on the street you wish to enter			18									
b. Enter at the same speed as the traffic			45									
c. Signal as the vehicle you want to enter behind passes by you			36									
159. If you are about to drive away from the curb you should:	2	996		43	00	00	-06	NA	-03	09	-21	02
a. Signal and pull into the street			01									
b. Signal, yield right-of-way and pull into the street			96									
c. Signal, wait for the first vehicle to pass and pull into the street			03									
160. When pulling out of a side street into a lane of traffic you should:	1	1072		49	04	07	04	NA	06	16	-25	-08
a. Move into the traffic lane and then increase your speed smoothly			50									
b. Edge out into traffic slowly and then quickly speed up			03									
c. Put on your turn signal as you begin moving into the traffic lane			46									
162. If you must stop your vehicle while driving you should:	1	1077		30	-03	-01	-01	NA	05	03	-15	-02
a. Look for a wide, firm part of the shoulder			89									
b. Stop on the road and turn on your left turn signal			03									
c. Pull off the road onto the left shoulder, if possible			08									
163. If you are going to pull onto the shoulder, you should first:	2	998		11	-03	-05	-01	NA	02	03	00	06
a. Signal your intention			95									
b. Slow down			04									
c. Turn your wheels			00									

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
164. After leaving a high speed road, it is most important to check your:	1	1077		21	02	02	00	NA	00	03	-11	-04
a. Gas gauge			04									
b. Speedometer			[illegible]									
c. Generator light			[illegible]									
164. Duplicate of above	3	1076		26	05	06	-01	-01	00	07	-12	-08
			04									
			[illegible]									
			[illegible]									
165. If you want to pull onto the shoulder and you are traveling at a fast speed:	2	1080		12	-05	-05	-05	NA	-01	08	04	-02
a. Hold the steering wheel loosely when pulling onto the shoulder			04									
b. Gently brake to a stop when on the shoulder			79									
c. Come to a stop before pulling completely off the road			17									
166. When you turn left into a driveway you:	1	1076		46	-04	-02	-02	NA	04	17	-24	-06
a. Should not signal for a left turn			02									
b. May cross a double line in the center of the road			71									
c. Should edge into oncoming traffic until you can complete the turn			27									
167. When you want to make a right turn into a driveway, you should:	1	1076		43	01	02	02	NA	00	15	-11	-13
a. Signal after you begin to turn			03									
b. Signal the traffic behind you to pass			49									
c. Avoid stopping on the road			47									
168. When turning into a driveway or alley it is most important to watch for:	1	1077		31	-01	03	-05	NA	00	14	-09	-09
a. Oncoming traffic that is waiting for you to turn			16									
b. Pedestrians who are window shopping			03									
c. Traffic going in or coming out of the same place			80									

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
169. When you turn into a driveway or parking lot you should generally: a. Begin slowing down after you start turning the steering wheel b. Slow down before the turn, but avoid stopping c. Stop in the road before you make the turn	2	1013	04 82 13	31	04	02	02	NA	04	-03	-08	-04
169. Duplicate of above	3	1058	06 85 09	25	03	06	00	06	11	-09	-08	-04
169. Duplicate of above	4	1168	06 81 13	34	01	00	02	05	01	-01	-09	-04
169. Duplicate of above	5	926	11 74 15	33	NA	NA	NA	NA	02	-02	-08	-08
170. After you have turned into a driveway or parking lot: a. Stop as soon as you are completely off the road b. Speed up so you will not block vehicles turning in behind you c. Continue at a slow speed and avoid stopping while still on the road	1	1080	09 04 87	34	01	00	01	NA	00	08	-14	-01
171. When leaving a parking lot, alley or driveway you should: a. Slow down only when there is traffic on the road b. Stop before entering the road c. Slow down and blow the horn before entering the road	2	993	01 97 02	11	-06	-06	-02	NA	00	-05	01	01

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
172. When you are leaving a parking lot, alley, or driveway:	1	1073		28	03	-01	03	NA	02	06	-15	03
a. You need not signal when turning onto the road			01									
b. Wait until a driver on the road signals you to enter			01									
c. Yield to traffic on the road			98									
173.N If you are backing to the right out of a driveway, it is most important to:	2	1002		30	-01	00	01	NA	06	-02	-08	-05
a. Check only the traffic coming from the left			04									
b. Back into the lane nearest the curb			88									
c. Start forward quickly once you are in the traffic lane			08									
175. When you come to an intersection where there are no traffic controls you should:	1	1068		26	02	05	03	NA	04	01	-09	-03
a. Slow down so you can stop before the intersection			71									
b. Come to a stop before you come to a crosswalk			11									
c. Continue at the same speed and watch for traffic			18									
175.N When you come to an intersection where there are no traffic controls you should:	3	1056		19	-01	01	-04	-03	04	05	-06	-09
a. Slow down so you can stop, if necessary, before the intersection			91									
b. Come to a stop before you come to a crosswalk			06									
c. Continue at the same speed and watch for traffic			02									
175. Duplicate of above	5	938	84 12 03	25	NA	NA	NA	NA	04	-05	-06	-11

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
176. When coming to an intersection, you should:	1	1068		39	00	00	-06	NA	12	07	-19	-07
a. Enter the correct lane within 25 feet of the intersection			33									
b. Come to a stop and yield to all traffic			25									
c. Look for signs that give you lane information			42									
177. If you want to turn left at an intersection, you should get into the left lane:	1	1076		23	-02	01	01	NA	02	-02	-15	-04
a. No more than 500 feet before the intersection			10									
b. At least 100 feet before the intersection			83									
c. Two or more blocks before the intersection			07									
178.M When about to make a turn, you should:	1	1076		27	00	00	07	NA	-02	01	-09	03
a. Slow down then move into the proper lane and turn			08									
b. Slow down then signal for the turn			26									
c. Move into the proper lane then signal for the turn			65									
178. When about to make a turn you should:	1	1075		24	01	00	01	NA	03	04	-10	-06
a. Move into the proper lane then slow down			12									
b. Slow down then move into the proper lane and turn			10									
c. Move into the proper lane then signal for the turn			78									
178. When about to make a turn you should:	1	1080		26	-04	-01	-06	NA	01	-01	-04	-03
a. Move into the proper lane then slow down			07									
b. Move into the proper lane then signal for the turn			81									
c. Slow down then move into the proper lane and turn			12									

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
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179. For turning, you should signal:	1	1076		14	-03	-06	01	NA	-04	07	-06	03
a. Just before the turn so you will not cause confusion			01									
b. After you begin to slow down			02									
c. At least 100 feet before the intersection			96									
180. When coming to an intersection it is most important to:	1	1077		33	00	01	06	NA	03	05	-14	-04
a. Stay in the same lane			07									
b. Flash the brake lights			01									
c. Look for and obey the traffic lights and signs			92									
181. If you come to an intersection where there is a traffic light and a traffic officer:	2	1002		17	-02	00	-12	NA	-01	-02	-02	01
a. Obey the traffic officer			93									
b. First obey the traffic officer, then the signal			07									
c. Obey the traffic signal			00									
182. If when coming to an intersection you see another vehicle approaching from the opposite direction:	2	998		26	00	00	00	NA	09	-14	-04	-03
a. Stop until you know what the other driver is going to do			24									
b. Continue at the same speed, since you have the right-of-way			29									
c. Be prepared to stop if the other driver signals for a left turn			46									
183. If an oncoming vehicle is making a left turn at an intersection do not:	1	1075		31	04	05	-02	NA	11	13	-12	-06
a. Continue at the same speed and drive around the vehicle			60									
b. Slow down to let the vehicle complete the turn			19									
c. Prepare to stop if it does not complete the turn			[illegible]									

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
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183. If an oncoming vehicle is making a left turn at an intersection do not: a. Slow down to let the vehicle complete the turn b. Continue at the same speed and drive around the vehicle c. Prepare to stop if it does not complete the turn	2	997	12 65 22	43	00	01	04	NA	-05	16	-22	-10
184. If a vehicle is coming from the right at an intersection where you have the right-of-way: a. Be prepared to stop by placing your foot over the brake pedal b. Speed up so that you can get through the intersection first c. Continue at the same speed since you have the right-of-way	1	1072	83 00 17	31	01	-01	03	NA	06	-04	-04	00
184. Duplicate of above	3	1061	88 01 11	22	08	10	04	09	04	00	-12	-05
184. Duplicate of above	4	1171	85 00 15	29	-03	-01	-02	-03	12	-05	-11	-11
184. Duplicate of above	5	926	81 01 18	27	NA	NA	NA	NA	08	-03	-03	-12
185. If at an intersection you see a vehicle coming from the left you should: a. Prepare to stop and yield the right-of-way if necessary b. Continue at the same speed, since you have the right-of-way c. Move as far to the right as possible and maintain your speed	1	1068	88 08 04	24	05	05	10	NA	-01	-01	-05	00

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
185. Duplicate of above	3	1058	87 08 05	21	-02	-03	01	00	-02	03	-01	01
185. Duplicate of above	4	1168	90 06 04	25	04	04	03	08	03	-03	-08	-06
185. Duplicate of above	5	940	78 12 09	24	NA	NA	NA	NA	03	-05	-08	-03
186. When entering a larger road you should: a. Only use your turn signals when there are vehicles behind you b. Estimate the speed and distance of vehicles on the larger road c. Assume you have the right-of-way over vehicles that are making turns from the larger road	1	1072	10 89 01	46	-01	-02	05	NA	-02	15	-23	-07
187. If you come to an intersection that is hard to see around because of trees or buildings: a. Stop at the intersection and edge forward slowly b. Proceed as if there was a yield sign at the intersection c. Slow down and blow your horn to warn drivers who cannot see you	1	1068	60 22 18	13	00	-01	-06	NA	-02	03	03	02
188. If at an intersection you are in the wrong lane to make your turn, you should: a. Signal to driver beside you and turn in front of him b. Proceed to the next intersection and turn there c. Wait until all other vehicles have cleared the intersection and turn	1	1064	01 89 11	40	03	03	-02	NA	06	16	-15	-04

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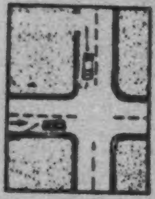
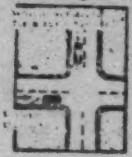
Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
188. Duplicate of above	3	1078	00 93 07	30	07	11	02	01	00	09	-14	-10
188. Duplicate of above	4	1170	01 91 08	37	-01	01	-06	-04	05	12	-17	-10
188. Duplicate of above	5	940	03 89 08	34	NA	NA	NA	NA	06	-07	-14	-10
189. When driving through an intersection is is most important to: a. Speed up slightly to get through the intersection b. Keep a close watch on your speedometer c. Check traffic signs and signals	2	993	05 00 94	21	-03	-01	-02	NA	-02	05	-08	-03
190. When coming to an intersection you should: a. Be prepared to stop because the lead vehicle may stop b. Enter the intersection even if you can not complete the turn c. Move as far to the right as possible	2	998	99 01 00	10	02	06	-03	NA	01	00	-05	-02
191. If an oncoming vehicle turns left across your path at an intersection: a. Move to the left and get around him b. Stop and let him turn c. Move to the right and get around him	1	1077	00 98 02	12	-05	-03	01	NA	-02	00	-06	-01

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
192. If you are making a left turn at an intersection you should: a. Yield to oncoming traffic b. Stop in the intersection and turn your wheels to the left c. Move to the right, then turn	1	1077	96 04 00	23	-05	-04	-02	NA	08	-03	-08	-09
193. If you plan to go straight through this intersection you should:  a. Avoid pulling out until the other vehicle starts to turn b. Proceed through the intersection at normal speed c. Wait until the other vehicle has completed the turn before you begin to move	1	1075	48 32 20	42	00	00	-05	NA	03	22	-21	00
193. If you plan to go straight through this intersection you should;  a. Proceed through the intersection at normal speed b. Wait until the other vehicle has completed the turn before you beyin to move c. Avoid pulling out until the other vehicle starts to turn	2	998	30 14 55	43	-05	-04	-12	NA	09	24	-15	-07
195.M You should check traffic coming from the left and the right before entering an intersection without signals because: a. Once you are in the intersection you should only look straight ahead b. You lose your right-of-way as soon as you enter the intersection c. You should not stop in the intersection	2	993	14 10 76	37	06	07	02	NA	-08	02	-09	01

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
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195. Duplicate of above	3	1058	13 12 74	36	05	09	11	11	-09	01	-15	02
195. Duplicate of above	4	1168	10 11 79	38	00	00	00	01	-01	04	-10	-03
195. Duplicate of above	5	926	12 17 71	41	NA	NA	NA	NA	-05	-08	-16	-09
196. You should slow down at an intersection if: a. The light turns yellow when you are in the middle of an intersection b. There are pedestrians near the corner c. There is a vehicle close behind you	2	998	12 85 02	40	01	02	-07	NA	10	18	-17	-09
197. If a traffic signal changes while a pedestrian is still in the street: a. Vehicles coming from the right have the right-of-way b. Vehicles making turns have the right-of-way c. The pedestrian has the right-of-way	2	985	00 00 100	11	-02	-02	-01	NA	00	-01	-03	-02
198. When in an intersection you should: a. Complete your turn even if you change your mind b. Signal if you want to make a turn at the next intersection c. Stop if the light turns yellow	2	998	89 03 07	43	-05	-06	-01	NA	00	07	-20	00
199. If after signalling for a turn in an intersection you decide you don't want to turn: a. Complete the turn anyway b. Turn off the signal and do not turn c. Speed up, change lanes if necessary and go straight ahead	1	1076	84 14 02	18	-02	-03	-04	NA	02	02	03	-02

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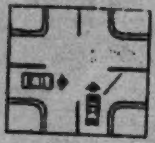
Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
200. Stopping within an intersection is permitted only: a. Where traffic requires b. To obtain information from a policeman c. When the light turns red	1	1068	86 04 10	38	02	05	-04	NA	06	10	-25	-09
200. Duplicate of above	3	1061	85 03 11	43	06	04	03	04	05	00	-19	-09
200. Duplicate of above	5	940	79 08 13	28	NA	NA	NA	NA	05	08	-04	-04
201. Cross traffic should be checked before entering an intersection: a. Only when you have a stop sign b. At all times c. Where there is a traffic light	2	993	03 97 00	10	01	02	02	NA	00	02	-04	-01
202.M When driving through an intersection you should: a. Yield only to pedestrians in crosswalks b. Observe oncoming traffic preparing to turn left c. Stay in the far right lane	2	1008	20 75 04	37	-01	00	-07	NA	-08	12	-19	-02
203. If an oncoming vehicle has started to turn left in front of you: a. Steer to your right to get around him b. Steer to your left to get around him and allow him to turn c. Slow down and allow him to turn in front of you	2	997	02 01 97	16	-01	-03	-04	NA	00	01	-01	-03

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
204. When you want to go straight through an intersection you should: a. Use the far left lane b. Cross after all oncoming traffic turns left c. Enter the intersection when it is clear enough for you to get all the way across	2	1013	05 02 93	16	-02	-02	05	NA	-01	-10	00	22
205. If, upon entering an intersection on a 2 lane road, a vehicle coming up from the left is going to hit you:  a. Brake and steer straight ahead b. Steer sharply to the right to reduce the impact angle c. Try to steer to the left of the vehicle and go around it	1	1076	11 77 12	21	04	03	04	NA	06	-12	-04	02
206.R If a vehicle approaches you quickly from the right while you are crossing an intersection: a. Speed up to get out of the way b. Blow the horn and continue at the same speed c. Turn left to avoid it	1	1075	45 26 29	28	01	02	07	NA	-03	07	-10	02
207. Before turning at an intersection, you should: a. Check cross traffic b. Come to a complete stop c. Tap your brakes 3 or 4 times	1	1064	75 25 00	36	05	07	02	NA	10	-01	-31	-10
207. Duplicate of above	3	1061	78 21 01	37	02	04	05	05	11	-11	-15	-09
207. Duplicate of above	4	1171	80 20 00	38	02	00	03	07	09	-10	-12	-11

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
207. Duplicate of above	5	954	69 30 01	34	NA	NA	NA	NA	06	-01	-11	-10
208. When preparing to turn right at an intersection it is most important to look for: a. Traffic coming from the right b. Traffic coming from the left c. Oncoming traffic signalling for a left turn	1	1076	08 70 21	29	01	04	01	NA	07	05	-11	-03
209. When making a right turn you should always: a. Check the road that you are turning onto for vehicles b. Signal several blocks before the turn c. Stop and check traffic before turning	2	1002	65 12 23	42	08	11	05	NA	14	-03	-15	-03
209. Duplicate of above	3	1078	65 09 26	41	02	06	-01	02	16	-05	-18	-14
209. Duplicate of above	4	1170	61 08 31	42	01	03	-03	-02	18	-08	-10	-09
209. Duplicate of above	5	940	47 08 45	27	NA	NA	NA	NA	04	-05	-10	-07
210. The correct way to make a right turn is to: a. Move to the left of your lane to give yourself room and then turn b. Keep within one foot of the curb throughout the turn c. Stay within your lane as you make and complete the turn	1	1064	01 16 83	38	-04	-03	-01	NA	09	00	-13	-11

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
211.M When you are making a right turn: a. Come to a complete stop and check for vehicles and pedestrians b. Apply increasing pressure to the brake as you go through the turn c. Avoid going any slower than 5 mph if possible	1	1076	65 15 20	24	07	07	05	NA	11	-06	-05	-06
211.M When you are making a right turn: a. Come to a complete stop and check for vehicles and pedestrians b. Avoid going any slower than 5 mph if possible c. Start to speed up as soon as you begin turning the wheel	1	1075	79 15 05	18	02	01	05	NA	12	-14	-03	02
212. When turning at an intersection, you should go no faster than: a. 5 mph b. 25 mph c. 15 mph	1	1064	41 06 53	26	-03	-01	-01	NA	01	06	-06	00
213. When turning left at an intersection: a. You have the right-of-way over oncoming traffic b. Check cross traffic from both directions c. Pull halfway into the intersection and edge into cross traffic	2	978	01 85 14	29	02	05	00	NA	03	-05	-01	-06
213. Duplicate of above	3	1078	00 90 09	25	04	04	06	03	03	-08	-04	-01

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Number and item		Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
214.	Before turning left at an intersection you should:	2	998		12	-02	-01	01	NA	-02	09	-04	01
	a. Wait until the light turns yellow before making your turn			01									
	b. Wait until traffic clears and you can complete the turn			99									
	c. Pull halfway into the intersection to block traffic from the left			00									
215.	In making a left turn you should not:	2	998		47	01	05	-03	NA	-07	24	-20	-06
	a. Pull halfway into the intersection and edge into cross traffic			84									
	b. Signal before you arrive at intersection			08									
	c. Slow down to a stop if traffic is heavy			08									
217.	If you want to turn left at an intersection and there is oncoming traffic, do not:	1	1076		43	-01	00	03	NA	11	12	-21	-04
	a. Move to the left of center lane			56									
	b. Keep your wheels pointed straight ahead			13									
	c. Proceed to the center of the intersection			31									
218.	It is safest to turn left across the path of oncoming traffic when:	2	978		36	01	05	00	NA	01	06	-20	-08
	a. You can get your vehicle into that lane before oncoming traffic arrives in the intersection			04									
	b. You have a red light and oncoming traffic has a green arrow pointing to the left			04									
	c. Oncoming traffic has cleared the intersection and there is a gap for the turn			92									
220.	When you wish to turn left you should check for people and vehicles to the left:	2	1005		23	-03	-02	00	NA	-11	08	-04	00
	a. About a block before the turn			50									
	b. Just before making the turn			50									
	c. Only when traffic is heavy			00									

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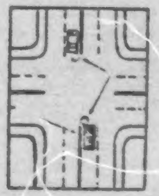
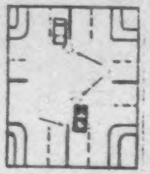
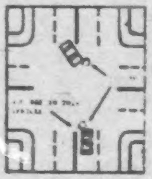
Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
221. If you want to turn left at an intersection and an oncoming vehicle also signals for a left turn:	1	1076		14	-03	-01	02	NA	02	12	-02	-05
												
a. Keep your wheels straight and do not move until he begins to turn			42									
b. Move part way into his lane and begin to make your turn			13									
c. Begin to turn when you see his signal but turn slowly			45									
222. The vehicle least likely to turn in front of you is the one that:	1	1068		40	01	01	-04	NA	10	11	-25	-07
a. Has its left turn signals on			17									
b. Begins to slow down			12									
c. Stops near the curb or shoulder			70									
223. Two left turning vehicles opposite one another should:	1	1076		42	01	03	02	NA	07	06	-23	-07
												
a. Turn in front of each other			49									
b. Turn one at a time			43									
c. Turn behind each other			08									
224. If you want to turn left at an intersection and an oncoming vehicle is turning left:	1	1076		51	03	04	01	NA	09	09	-20	-09
												
a. Pause and watch for traffic alongside of the oncoming vehicle			61									
b. Turn quickly so you will not block traffic			01									
c. Wait until the oncoming vehicle completes its turn, then make your turn			38									

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
225. Before you turn left you should:	1	1064		30	-05	-03	-05	NA	03	18	-15	-03
a. Always wait until oncoming traffic is stopped for the light			06									
b. Signal the vehicles behind you to pass			01									
c. Yield to oncoming traffic and check for pedestrians or vehicles			93									
225. Before you turn left you should:	1	1080		45	-02	-02	-07	NA	-01	17	-25	-08
a. Yield to oncoming traffic and check for pedestrians or vehicles			93									
b. Signal the vehicles behind you to pass			01									
c. Always wait until oncoming traffic is stopped for the light			07									
226. When in an intersection about to turn left you should:	1	1064		23	05	10	-01	NA	-01	08	-08	-03
a. Complete your turn when oncoming traffic has cleared			98									
b. Wait until the light changes to red before turning			02									
c. Stop the oncoming traffic by moving into their lanes			00									
227. If the light turns red when you are in an intersection about to turn left:	1	1076		28	01	02	-07	NA	09	08	-10	-04
a. Go straight ahead, if possible			10									
b. Complete the turn when traffic clears			80									
c. Back out of the intersection, if possible			10									
230. As you come to a curve in the road:	1	1068		37	-03	-01	-05	NA	17	00	-05	-12
a. Move to the outside of your lane to make the turn more easily			18									
b. Check for posted speed limits to see if you should slow down			71									
c. Apply your brakes after you enter the curve			10									

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
231.M If a speed limit is not posted before a curve on a highway:	1	1072		41	06	07	08	NA	05	-02	-15	-10
a. Continue at the same speed			05									
b. Slow down to 35 or 40 mph			12									
c. Judge how sharp the curve is and change your speed accordingly			82									
231. Duplicate of above	3	1058	05 14 81	36	03	04	06	07	04	00	-14	-09
231. Duplicate of above	4	1168	03 13 83	39	03	02	00	03	05	03	-17	-07
231. Duplicate of above	5	926	05 17 77	35	NA	NA	NA	NA	02	02	-03	-09
232. If you are about to enter a curve after driving at highway speeds you should:	1	1075		33	00	02	-04	NA	18	-07	-03	-03
a. Check your speedometer to make sure you are going slow enough			60									
b. Maintain the same speed and move to the outside of the curve			05									
c. Begin applying the brakes before the curve and keep them on while in the curve			34									
232. If you are about to enter a curve after driving at highway speeds you should:	2	1013		28	01	04	-01	NA	14	-11	-03	-09
a. Maintain the same speed and move to the outside of the curve			08									
b. Check your speedometer to make sure you are going slow enough			52									
c. Begin applying the brakes before the curve and keep them on while in the curve			40									

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
233. When driving through a curve, you should:	1	1068		35	01	04	03	NA	18	-10	-08	-06
a. Keep your brakes slightly applied			41									
b. Stay as far to the left as possible			05									
c. Look well ahead to where you are going			54									
235.N After entering a curve you should:	1	1075		37	00	-01	02	NA	01	10	-17	01
a. Pump on your brakes			04									
b. Keep pressure on the gas pedal			27									
c. Gradually slow down			69									
235. After entering a curve you should:	2	1005		45	-03	00	-06	NA	03	16	-17	-15
a. Pump your brakes			03									
b. Gradually slow down			58									
c. Keep pressure on the gas pedal			38									
236. If you find that you are going through a curve too fast it is best to:	2	998		24	-03	-01	-06	NA	12	09	00	-08
a. Pump the brakes lightly			51									
b. Release the gas pedal			42									
c. Shift into a lower gear			07									
237. If you cannot see around a curve, you should:	1	1072		27	01	04	-02	NA	09	06	-09	-03
a. Slow down more than you normally would			81									
b. Continue as you would through any curve			04									
c. Drive around the curve at 5 to 10 mph			16									
237. Duplicate of above	3	1061		33	05	05	-05	-03	11	08	-11	-13
			82									
			02									
			16									
237. If you cannot see around a curve you should:	1	1077		30	-04	-01	-04	NA	11	07	-09	-11
a. Continue as you would through any curve			94									
b. Slow down more than you normally would			06									
c. Drive around the curve at 5 to 10 mph			01									

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Number and item		Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
					Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
240.	When approaching the top of a hill you should:	1	1077		29	-03	-03	-01	NA	10	-06	-10	-06
	a. Slow down because you cannot see very far ahead			87									
	b. Blow your horn to warn other vehicles or pedestrians			11									
	c. Move up close to the vehicle in front of you so you can pass while going downhill			02									
241.	When nearing the top of a hill on a narrow road:	2	991		15	08	07	00	NA	-04	04	-08	-03
	a. Get ready to pass any slow vehicles in front of you			01									
	b. Speed up			00									
	c. Keep far to the right			99									
242.	When about to go down a hill, you should first:	1	1068		50	-02	02	-02	NA	18	03	-21	-13
	a. Shift to a lower gear			37									
	b. Begin to apply your brakes			28									
	c. Judge how long and steep the hill is			34									
243.M	Before going down a long, steep hill:	2	985		19	-03	-01	-02	NA	10	02	-07	-06
	a. Shift into neutral			01									
	b. Test your brakes and shift into lower gear			98									
	c. Use your emergency brake			00									
244.	For best control on a steep downgrade you should begin to slow down:	2	991		19	05	07	05	NA	-02	-17	-08	00
	a. Just after starting downhill			18									
	b. Before starting downhill			81									
	c. About halfway down the hill			01									
244.	Duplicate of above	3	1061	19 80 01	13	00	00	03	02	00	-18	04	04
244.	Duplicate of above	4	1171	20 79 01	27	-01	01	01	02	04	-14	-04	-02

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
244. Duplicate of above	5	954	28 67 04	19	NA	NA	NA	NA	-03	-08	-07	-04
244. Duplicate of above	1	1075	15 84 01	12	-03	-01	-01	NA	00	-13	-01	-03
245. While going down a hill you should try to: a. Drive slightly slower than the other traffic b. Keep a constant speed c. Speed up slightly	1	1072	23 76 00	46	-03	-01	02	NA	12	10	-21	-08
248. Before making a lane change, you should first: a. Put on your turn signal b. Check the markings on the road c. Look for rear approaching traffic in the new lane	1	1068	41 11 47	26	-07	-05	-02	NA	-02	15	-13	03
249. When changing lanes you should: a. Look behind you, signal, and check your mirror b. Check your mirror, look behind you and signal c. Signal, check your mirror, and look behind you	2	1002	09 24 67	19	04	03	08	NA	04	-13	-02	02
250. Before changing lanes from the right to the middle lane on a 6 lane road you should: a. Check for vehicles entering middle lane from the left behind you b. Signal for a left turn and blow your horn c. Slow down and then signal for a left turn	1	1072	90 00 09	33	00	03	-02	NA	08	15	-20	-07

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
251.M After changing lanes you should: a. Adjust your speed to the legal speed limit b. Keep your turn signals on until you have adjusted your speed c. Check behind you for vehicles coming up fast or wanting to pass you	1	1072	52 09 39	26	02	05	00	NA	06	-01	-03	-05
252.M After deciding to change lanes you should check behind you for vehicles: a. Turning off the road b. About to enter your new lane c. Entering the road	1	1068	01 95 04	25	07	10	-02	NA	04	05	-12	-07
252. Duplicate of above	3	1061	00 95 04	24	05	07	04	04	02	06	-15	-03
252. Duplicate of above	4	1171	01 96 03	27	08	05	05	OC	-02	-03	-10	-02
252. Duplicate of above	5	938	01 92 06	29	NA	NA	NA	NA	06	00	-05	-08
252.M After deciding to change lanes you should check behind you in the new lane for vehicles: a. Exiting from that lane b. Entering the road c. About to enter your new lane	1	1072	10 03 86	31	-05	-04	01	NA	00	-02	-12	-02
253. You can check your blind spot before changing lanes by: a. Turning around and looking out the window b. Looking at the left side mirror c. Looking into the rearview mirror	1	1072	55 30 14	36	00	00	05	NA	-02	15	-17	-04

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
254. When changing lanes on a highway you should:	1	1080		39	00	00	04	NA	00	07	-16	-04
a. Drive slightly above the speed limit until you find space in the new lane			17									
b. Speed up or maintain your speed			78									
c. Turn sharply into the new lane			05									
255. After moving into a new lane you should drive near the:	1	1072		32	01	03	-06	NA	06	15	-16	-06
a. Left side of the lane			02									
b. Right side of the lane			05									
c. Center of the lane			92									
255. Duplicate of above	3	1058	04 15 81	40	02	02	09	09	-04	06	-20	-01
255. Duplicate of above	4	1168	03 16 80	43	02	01	-02	-02	-03	16	-18	00
256. When about to change lanes on a highway you should:	2	1005		27	00	02	-02	NA	08	17	-06	-08
a. Slow down until you can change lanes			38									
b. Drive just above the speed limit until you find a gap			08									
c. Maintain your speed or speed up until you can change lanes			54									
257. Passing results in:	2	998		30	03	05	-03	NA	05	-03	-13	-04
a. Many fatal accidents per year			84									
b. Many accidents but few deaths per year			07									
c. Relatively few serious accidents per year			09									

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
257.M Passing maneuvers result in: a. Many fatal accidents per year b. Many accidents but few deaths per year c. Relatively few serious accidents per year	3	1061	87 06 06	39	09	12	03	06	06	-03	-18	-13
258. Before deciding to pass another vehicle you should first check: a. The road ahead for oncoming traffic b. For signs prohibiting passing c. Behind you for traffic in the passing lane	1	1075	31 50 18	33	-02	-01	-01	NA	-07	15	-21	-01
260. The safest time to pass vehicles ahead of you on a 2 lane highway is when: a. You are coming to an intersection b. A sign indicates there is a hill ahead c. A sign indicates the end of a "No passing" zone	1	1075	09 06 84	44	03	04	07	NA	-01	04	-22	-06
260. Duplicate of above	3	1061	09 06 83	41	02	02	03	02	09	01	-24	-11
261. The best way to tell whether you are permitted to pass other vehicles is to see if: a. The road ahead is straight b. The vehicle ahead signals that it is OK to pass c. There are solid or broken lane marks	1	1075	11 07 82	24	-01	02	-01	NA	-04	08	-11	-02
262. If you are in a "No Passing" zone and you are behind a slow moving vehicle you should: a. Wait until you are out of the "No Passing" zone before beginning to pass b. Begin to pass the vehicle when you are near the end of the "No Passing" zone c. Use the shoulder in order to pass the vehicle	1	1075	99 01 00	19	05	02	-01	NA	01	03	-08	-02

UNIVERSITY OF MICHIGAN H.S.R.I. ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients									
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
263. After moving into a new lane it is best to drive: a. Slightly slower than the traffic in the new lane b. At the same speed as the traffic in the new lane c. At the posted speed limit	1	1072	02 73 24	39	-02	00	07	NA	07	06	-20	-14
264. If there is no oncoming traffic when nearing the end of a "No passing" zone: a. Wait until the end of the "No passing" zone before acting b. Increase your speed and get ready to change lanes c. Slow down because this is an unsafe area	1	1075	77 03 20	37	02	06	03	NA	01	07	-20	-08
264. Duplicate of above	3	1078	74 03 22	32	00	01	02	00	-02	13	-17	-04
266. On a 2 lane road it is safe to pass when you come to a: a. Railroad crossing b. Divided highway c. Group of people walking on the shoulder	1	1075	01 94 05	13	-02	-03	-01	NA	-04	07	-06	-06
267. If you pass another vehicle when you are near a railroad track, you: a. Should apply the brakes lightly when going over the tracks b. Will be violating the law c. May not see an oncoming train	2	1005	04 53 42	29	-03	-04	02	NA	03	-07	06	00
268. Before you decide whether to pass on a 2 lane highway you should: a. Judge how much distance there is for passing b. Shift to a lower gear c. Turn on your turn signal	2	993	89 00 11	33	02	00	01	NA	-01	03	-10	00

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
268. Duplicate of above	3	1061	75 00 25	39	03	04	02	01	06	08	-18	-05
269. Before beginning to pass, you should: a. Judge the speed of the lead vehicle b. Slow down so you will have more room to pass c. Blow the horn and put on your bright lights	1	1068	87 06 06	31	-02	00	01	NA	-03	-03	-13	00
271. Before passing another vehicle you should *first*: a. Speed up as much as possible and put on your signal lights if you have to change lanes b. Judge the distance available for passing and how fast you are approaching the other vehicle c. Signal to the vehicle that you want to pass	1	1075	06 68 26	48	-02	-01	-03	NA	09	07	-22	-05
272. When deciding whether it is safe to pass a vehicle, you should consider: a. How many vehicles are behind you b. How fast your vehicle can speed up c. Whether the road is made of concrete or asphalt	1	1075	33 65 02	46	04	06	-04	NA	13	12	-19	-09
273. The ability of your vehicle to speed up in order to pass is most affected by: a. Your skill as a driver b. Whether the road surface is concrete or asphalt c. Heavy loads such as trailers, cargo, or passengers	2	991	24 04 72	45	-03	01	-03	NA	13	16	-19	-10
274. If you are driving an unfamiliar vehicle: a. Allow more room for passing on 2 lane roads b. Never drive faster than 60 mph c. Stay in the right lane if you are on a freeway	1	1075	27 10 63	37	01	02	-02	NA	16	07	-18	-09

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
276. On a 2 lane road you should pass only when:	2	998		25	-05	-05	-03	NA	02	-05	-09	-02
a. There is a solid line to the left of your lane			06									
b. There is enough room to return safely to your lane after the pass			93									
c. The vehicle ahead of you is going more than 15 mph below the speed limit			01									
277. If you are not sure you have enough distance to pass you should:	2	998		07	05	05	00	NA	00	-01	04	-02
a. Put vehicle in a lower gear and speed up			00									
b. Signal the driver ahead to slow down			00									
c. Wait for a better chance to pass			100									
278. The first thing you should do before passing is:	1	1075		19	05	02	08	NA	-02	04	-12	01
a. Make sure way is clear of oncoming traffic			98									
b. Sound horn			00									
c. Increase your speed			01									
279. When you decide to pass on a 2 lane road you should:	1	1077		41	14	17	00	NA	11	03	-13	-03
a. Judge the distance to the first oncoming vehicle			89									
b. Keep blinking your lights until you finish passing			10									
c. Check your speed often as you are passing			01									
279. Duplicate of above	3	1061	81 18 01	26	00	01	00	01	04	-03	02	-10
279. Duplicate of above	4	1171	90 08 01	34	04	03	06	01	02	-09	-08	-06

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
279. Duplicate of above	5	954	83 14 02	40	NA	NA	NA	NA	08	04	-10	-13
279. When you decide to pass on a 2 lane road you should: a. Keep blinking your lights until you finish passing b. Check your speed often as you are passing c. Judge the distance to the first oncoming vehicle	1	1075	15 01 83	41	00	04	-03	NA	09	07	-17	-13
280. The best reason for allowing extra time and distance for passing on a 2 lane road is: a. It may take longer to pass than you think b. The vehicle you are passing may speed up c. You may lose steering control while passing	1	1075	74 24 01	30	02	03	00	NA	17	00	-11	-09
280. Duplicate of above	3	1078	77 21 02	24	01	02	-03	01	18	-10	-12	-12
280. Duplicate of above	4	1170	78 21 01	28	-03	02	-02	01	14	-03	-06	-11
281. When passing at high speeds, most drivers: a. Take longer to complete the pass than they thought b. Drive too close to the left edge of the road c. Take too long in getting back into the right lane	1	1075	48 09 42	31	01	00	00	NA	12	-02	-14	-02

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
283.M If to pass the vehicle ahead, you'd have to drive faster than you like:	1	1072		28	05	02	11	NA	02	-07	-07	-02
a. Signal the vehicle to slow down b. Wait for a better chance to pass c. Drive alongside the vehicle until it slows down			03 96 01									
286. If you want to pass a vehicle that is weaving from side to side you should:	2	1013		26	01	00	04	NA	02	07	-02	00
a. Pull off the road and wait to allow greater separation distance b. Pull onto the shoulder to pass if necessary c. Sound your horn or flash your lights			30 02 67									
288. On a 2 lane road it is generally safe to pass a vehicle that is:	1	1075		32	-06	-03	-04	NA	03	11	-15	-05
a. Suddenly slowing down b. Towing a small trailer c. Being passed by another vehicle			28 47 24									
291. On a 2 lane road, do not:	1	1075		49	01	04	00	NA	01	11	-23	-06
a. Look in front of the vehicle you want to pass b. Pass vehicles making a left turn from the right lane c. Pass moving traffic on the left			05 76 18									
293. When there are 2 lanes of traffic going in your direction, it is generally safe to:	1	1075		19	04	05	06	NA	-03	-03	02	01
a. Use the right lane to pass vehicles that are making left turns b. Blow your horn when passing another vehicle on the right c. Stay in the left lane until someone wants to pass you			85 02 13									
293. Duplicate of above	3	1058	86 02 12	25	03	06	10	08	01	-11	-02	-04

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Number and item	Pilot number	Number of subjects	Response distribution	Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
				Item correlation coefficients								
293. Duplicate of above	5	926	80 05 15	29	NA	NA	NA	NA	-01	-09	-14	-10
294. When about to pass you should generally:	1	1072		24	-01	01	02	NA	09	03	-14	-08
a. Move up very close to the lead vehicle, then change lanes			04									
b. Drop back and change lanes far behind the lead vehicle			06									
c. Maintain usual following distance until you change lanes			89									
295. When about to pass a vehicle on a divided highway you should:	1	1072		25	01	01	01	NA	06	-04	-14	-03
a. Move into the passing lane well before passing			89									
b. Turn on your bright lights and have them on until you complete the pass			06									
c. Flash your brake lights to warn following vehicles			04									
296. Before passing the vehicle ahead you should:	2	978		22	-03	-04	-05	NA	01	11	-01	-05
a. Move up very close to it before pulling out			10									
b. Blow your horn or flick the lights			19									
c. Edge into the left lane to check for oncoming traffic			71									
297. You should always blow your horn if the driver you are passing:	1	1075		36	04	04	04	NA	-08	07	-21	-07
a. Is signaling for a right turn or has begun to slow down or is passing parked vehicles			03									
b. Cannot see behind him or is not paying attention or begins to move sideways toward you			94									
c. Flashes his headlights or begins to move to the right			03									

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
297. Duplicate of above	3	1058	03 93 03	32	00	-02	04	02	[illegible]	06	-15	-05
297. Duplicate of above	5	940	04 92 03	33	NA	NA	NA	NA	-04	04	-04	-08
298. When passing several vehicles at the same time on a 2 lane road you should: a. Slow down after passing the first vehicle b. Drive as far to the left as you can c. Be careful that one of the vehicles does not pull out in front of you	1	1075	13 13 75	33	01	04	03	NA	08	-03	-09	-13
299. When passing a vehicle you should remember that the other driver will not be able to see you when you are: a. Directly behind the vehicle b. Close to the right front window of the vehicle c. Near the left rear fender of the vehicle	1	1075	07 14 79	44	-01	03	00	NA	06	26	-28	-09
300. When passing another vehicle you should: a. Return to the right lane as soon as you clear its front bumper b. Flash brake lights several times before returning to the right lane c. Not go over the speed limit unless necessary	1	1075	16 08 75	44	-01	03	-05	NA	17	08	-16	-16
301. If, when passing with an automatic shift vehicle, you need to quickly speed up you should: a. Gradually put more pressure on the gas pedal b. Press the gas pedal to the floor c. Pump the gas pedal	2	1002	52 48 01	43	05	09	01	NA	32	-05	-15	-17

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
302. If, while passing, it appears that you will not have time to complete the pass: a. Slow down and return to the right lane behind the vehicle you were passing b. Speed up quickly and cut in front of the vehicle you are passing c. Continue as you are and signal the vehicle you are passing to slow down	1	1075	95 00 04	32	-02	00	-04	NA	10	02	-15	-08
303. If you can see far ahead you may: a. Drive above the speed limit b. Drive on the shoulder of the road c. Pass several vehicles at once	1	1075	05 04 90	48	05	07	00	NA	04	05	-21	-11
303. Duplicate of above	3	1078	07 02 91	37	03	05	06	06	-01	04	-18	-05
303. Duplicate of above	5	938	09 09 80	47	NA	NA	NA	NA	01	-09	-13	-13
304. If you want to pass several vehicles at the same time on a 2 lane road you should: a. Check the room left for passing before passing each of the vehicles b. Slow down before passing each of the vehicles c. Drive 15-20 mph over the posted speed limit	1	1077	96 03 01	29	00	03	03	NA	05	03	-12	-04
304. If you want to pass several vehicles at the same time on a 2 lane road you should: a. Slow down before passing each of the vehicles b. Drive 15-20 mph over the posted speed limit c. Check the room left for passing before passing each of the vehicles	1	1075	04 02 94	25	01	07	-04	NA	05	00	-11	-18

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
305. When passing a vehicle you should return to the right side of the road when: a. You can see both its headlights in your rearview mirror b. You are 50 feet in front of the passed vehicle c. You have cleared the front bumper by a vehicle length	1	1075	46 37 17	27	06	07	03	NA	02	08	-10	-01
305. Duplicate of above	3	1078	53 32 14	17	04	04	08	08	-03	02	-05	03
305. Duplicate of above	5	940	55 25 20	34	NA	NA	NA	NA	06	04	-03	-04
306. After passing a vehicle on a 2-lane road you should generally: a. Gradually turn back to the right lane b. Turn sharply back to the right lane c. Slow down and then move into the right lane	2	998	91 03 06	30	03	05	08	NA	09	-08	-06	-09
306. Duplicate of above	3	1058	92 03 05	22	-01	-01	01	02	04	-02	00	-03
307. Before pulling in front of a vehicle you have just passed, you should: a. Speed up b. Check your speedometer c. Put on your turn signal	1	1075	08 01 91	26	-01	00	-04	NA	06	10	-07	-04

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
308. When making a U-turn: a. Pause and check rear traffic before starting in your new direction b. Blow your horn to warn all traffic to slow down and wait c. Only use hand signals during the turn	2	993	95 00 04	19	-03	-03	-07	NA	-02	12	-09	-05
311. If you decide to use a driveway when turning around, it is best to: a. Drive forward into the driveway and then turn while backing out b. Back into the driveway and then move forward into traffic c. Select a driveway that has vehicles parked on either side of it at the curb	2	997	76 23 01	25	-01	00	-05	NA	05	-11	-06	-04
312. If you need to reverse your direction while driving on a road it is usually best to: a. Make the necessary right and left turns b. Make a Y-turn c. Make a U-turn	2	1003	73 03 24	22	05	07	00	NA	-07	-03	-08	-02
312. Duplicate of above	3	1058	69 04 26	10	05	03	05	03	-04	-08	-06	-03
312. Duplicate of above	5	926	64 04 32	18	NA	NA	NA	NA	-06	-22	-26	-24
314. If you miss your exit on the freeway you should: a. Go on to the next exit b. Stop and back up c. Stop and ask for directions	2	993	100 00 00	17	03	12	-02	NA	-04	03	-09	-07

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
316. When backing up you should assume that: a. You have the right-of-way if you have signaled b. You can see everything behind you by using your mirrors c. Pedestrians may not notice that you are backing up	2	998	02 12 86	44	-04	-03	03	NA	05	16	-24	-11
317. The correct order of operations when backing up is: a. Look to the rear, make sure vehicle is stopped, shift into reverse b. Make sure vehicle is stopped, look to the rear, shift into reverse c. Shift into reverse, make sure vehicle is stopped, look to the rear	2	993	24 70 06	38	-03	-02	-09	NA	18	16	-10	-07
318. Before beginning to back up, you: a. Need not come to a complete stop b. Must straighten your front wheels c. Should look to the right and left	2	1002	02 18 81	10	03	03	01	NA	-01	-08	04	00
318. Duplicate of above	3	1078	01 17 82	07	00	-01	03	02	00	-13	04	03
319. When backing up it is usually best to: a. Steer with one hand, while looking into the rearview mirror b. Steer with both hands while looking out the left front window c. Steer with one hand, while looking out the rear window	2	1002	04 22 71	33	-05	-03	-07	NA	14	31	-11	-08

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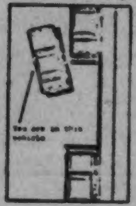
Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
321. When backing up you should: a. Allow less distance to stop than if going forward b. Speed up slightly when turning c. Avoid making quick steering changes	2	993	21 00 79	43	00	03	-07	NA	06	20	-16	-10
322. Before you begin to back into a parallel parking space you should: a. Put on your 4-way flashers to warn other vehicles b. Signal following traffic to pass if there is another lane c. Open your door and look for traffic behind you	2	1008	18 78 04	3[illegible]	-07	-06	00	NA	03	10	-06	-05
323. When backing into a parallel parking space you should straighten your wheels when:  a. Your front seat is in line with the rear bumper of the vehicle alongside of you b. You have moved about 1 to 2 feet c. Your front bumper is in line with the rear bumper of the vehicle parked alongside you	1	1064	40 06 54	20	-03	-01	-03	NA	00	09	-04	-04
324. If you park along the right hand curb facing uphill you should: a. Keep the front wheels straight b. Turn the front wheels to the left c. Turn the front wheels to the right	1	1064	00 78 22	37	03	05	-04	NA	11	08	-14	-08
325. It is most important to turn the front wheels toward the curb: a. When parking facing downhill b. When parking facing uphill c. At all times	2	1008	85 04 11	31	01	02	02	NA	-03	04	-11	-02

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
326. When parking on a hill where there is no curb, you should: a. Leave your front wheels straight b. Point your front wheels away from the road c. Turn your front wheels toward the road	1	1064	10 70 20	24	06	07	-08	NA	10	-01	-04	-06
328. After parking your vehicle you should: a. Be 2 to 4 inches away from the vehicle in front of you b. Straighten your front wheels c. Firmly apply the parking brake	2	976	01 01 97	10	-02	-03	-08	NA	06	-02	-02	-05
332. When backing out of a parking space where you are at an angle facing the curb: a. Continue looking through the rearview mirror and slowly back out b. Have someone outside of the vehicle direct you and traffic until you are out c. Turn around and watch for other vehicles while slowly backing out	2	1008	07 00 92	23	00	01	03	NA	08	01	-03	-01
333. When backing out of an angle parking space, you should begin turning your wheels: a. As soon as you can clear the vehicles on either side of you b. As soon as you start backing up c. Back and forth to ease your way out of the space	1	1064	90 05 04	28	00	00	03	NA	10	-03	-07	-08
334. If you find you must pull off the highway when you are in the left lane and cannot reach the right shoulder: a. Leave the road and move onto the median b. Stop in the left lane and then slowly move over to the right c. Continue to the first exit and get off	2	985	52 06 41	49	-06	-03	-04	NA	10	15	-30	-13

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
337. If you must stop because of mechanical trouble when on a highway it is best to stop:	2	978		28	-01	02	02	NA	00	07	-10	-04
a. In the right lane of the road and flag down the first vehicle you see			01									
b. So that your vehicle is facing oncoming traffic and put your lights on			00									
c. On the shoulder, turn on the flashers, raise the hood and wait for help			99									
338. If you cannot drive your vehicle off the road after an accident, you should not:	2	998		34	-03	-02	03	NA	06	06	-13	-02
a. Stay in your vehicle			52									
b. Get out and leave the road			23									
c. Try to push the vehicle off the road			25									
341. When driving in an alley or parking lot it is important to:	2	997		19	-04	-02	-11	NA	21	05	02	-11
a. Stay close to building or vehicles on your right			24									
b. Keep a constant speed			01									
c. Watch for children			75									
344. When driving in parking lots:	1	1077		12	-01	-01	02	NA	-01	-02	-04	-04
a. You may cut across empty spaces if no vehicles are coming			01									
b. Watch out for vehicles going into or coming out of parking spaces			98									
c. You do not have to signal when turning			01									
345. When in a parking lot you should:	2	991		34	-03	-02	07	NA	05	05	-09	-09
a. Expect people and vehicles to cut in front of you			84									
b. Keep all your windows closed to block out the noise			00									
c. Only use hand signals when turning			16									

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
346. When driving you should pay most attention to the:	3	978		27	-07	-04	03	NA	06	13	-04	-13
a. Road surface			77									
b. Brake system			19									
c. Gas guage			04									
351. If you see a sign warning of poor road conditions ahead:	2	985		08	03	02	-02	NA	03	06	-03	01
a. Brake quickly and stop			00									
b. Move toward the center of the road and continue at the same speed			00									
c. Slow down before you get to the problem area			100									
352. Before steering around a hole in the road you should:	1	1080		38	-04	-03	00	NA	00	13	-17	-03
a. Put on your emergency flashers			03									
b. Check the traffic around you			83									
c. Put on your turn signals even if you will not have to change lanes			14									
353. When driving on roads covered with water, ice, or mud:	2	997		32	01	02	05	NA	02	-08	-07	-02
a. Change your speed and direction slowly			95									
b. Drive at the same speed as on a dry road			00									
c. Vary your speed often			05									
354. When driving on a slippery road you should:	1	1076		48	06	06	08	NA	07	08	-15	-05
a. Hit your brakes harder to stop			00									
b. Not make quick turns			76									
c. Slow down and stop at every intersection			24									
354. Duplicate of above	3	1058		42	02	04	10	13	03	-02	-14	-12
			00									
			82									
			18									

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Number and item		Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
					Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
354.	Duplicate of above	5	940		39	NA	NA	NA	NA	02	-02	-08	-07
				01									
				64									
				35									
355.	When driving on icy roads you should:	2	993		26	01	00	-02	NA	05	-04	-04	-07
	a. Slow down when coming to intersections			88									
	b. Drive with one foot on the brake			05									
	c. Keep your brakes on when driving down hills			06									
357.	If you are driving and it starts to rain:	2	985		23	-01	02	-04	NA	04	06	-13	-08
	a. You need not slow down unless it begins to rain hard			00									
	b. Pull over to the side of the road and stop until the rain stops			00									
	c. Be careful since rain and road oil may create a slippery surface			99									
358.	You should be most careful when turning or stopping:	1	1076		36	06	10	03	NA	08	-05	-13	-10
	a. After it has been raining all day			30									
	b. A half hour after it stops raining			03									
	c. During the first half hour of rain			67									
358.	You should be most careful when turning or stopping:	3	1058		43	01	02	05	04	11	-08	-11	-11
	a. After it has been raining all day			28									
	b. A half hour after it stops raining			03									
	c. During the first half hour of rain			69									
358.	You should be most careful when turning or stopping:	4	1168		39	02	07	01	08	04	-07	-17	-12
	a. After it has been raining all day			26									
	b. A half hour after it stops raining			03									
	c. During the first half hour of rain			70									
358.	Duplicate of above	5	938		33	NA	NA	NA	NA	07	-07	-11	-15
				34									
				06									
				59									

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
359. When driving on a wet road, you should:	1	1068		35	-01	01	-05	NA	08	13	-16	-04
a. Try to avoid driving on the tracks of other vehicles			09									
b. Test your brakes by pumping them lightly			79									
c. Keep one foot over the brake pedal			11									
360. If there is a layer of water on the road:	2	1008		47	-02	00	00	NA	14	01	-27	-12
a. Increase your following distance behind large trucks			75									
b. Increase your speed if you begin to lose traction			07									
c. Travel at the same speed as on a dry road			18									
361. At low speeds your tires are most likely to ride on top of the water if:	2	1013		38	-08	-04	-03	NA	16	14	-14	-10
a. They are bald			61									
b. You put too much air in them			23									
c. The road is very smooth			16									
362. If deep water covers the road ahead you should:	1	1064		34	04	03	-08	NA	13	08	-07	-06
a. Steer your vehicle around the area, if possible			91									
b. Shift into neutral as you enter the area			07									
c. Speed up and go through the water			01									
363. Duplicate of above	3	1038	93 06 01	26	-08	-06	-03	-02	08	00	-10	-08
363. Duplicate of above	5	936	92 06 01	29	NA	NA	NA	NA	10	-03	-04	-07

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
364. After driving through a deep puddle you should first: a. Check your lights b. Increase your speed to the posted limit c. Test your brakes	1	1077	01 01 98	19	-03	-02	04	NA	01	02	-02	-03
365. If you get water in all four brakes: a. Your brakes may grab and stop you suddenly b. It will take twice as far to stop c. Your brakes may not hold at all	1	1068	10 10 79	20	04	03	-03	NA	02	00	-11	-06
365. Duplicate of above	3	1061	16 10 74	19	02	02	01	02	06	-07	-04	-05
365. Duplicate of above	5	954	08 19 72	24	NA	NA	NA	NA	00	-11	-12	-11
366. If you get water in your right front brake and try to stop, your vehicle will: a. Pull to the right b. Stop straight c. Pull to the left	1	1077	38 03 59	42	-02	00	-11	NA	17	16	-16	-04
367. If your brakes are not holding because they are wet you should: a. Continue driving and they will dry off b. Keep one foot on the gas and one lightly on the brake until dry c. Stop on the side of the road and wait for them to dry	2	1002	02 66 32	37	-04	-04	-01	NA	18	-03	02	-07

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
369. If you see wet leaves on the road ahead you should:	1	1076		41	07	08	-03	NA	10	07	-08	-07
a. Turn sharply to avoid driving through the leaves			03									
b. Take your foot off the gas pedal as soon as you are on the leaves			24									
c. Keep your foot off the brake while on the leaves			73									
370. Duplicate of above	3	1078	02 21 77	29	02	04	00	-01	01	01	-00	-07
371. Duplicate of above	4	940	03 31 66	26	NA	NA	NA	NA	01	-09	-17	-19
372. When driving on snow or ice do not:	2	985		48	02	04	02	NA	-04	12	-24	-01
a. Look at other vehicles to see if they are skidding			11									
b. Watch out for vehicles coming out of side streets			17									
c. Wait until you reach the intersection before slowing down			72									
373. The best way to get good traction on hard packed snow is to:	2	1005		13	-01	-01	-04	NA	-03	03	08	-04
a. Put on chains			95									
b. Let air out of your tires			03									
c. Carry extra weight in the trunk			02									
374. When starting to move in snow you should:	1	1064		37	04	05	-05	NA	17	00	-06	-10
a. Avoid driving in tracks already made			06									
b. Keep slight pressure on the brake			19									
c. Keep your wheels straight ahead			76									

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
377. If you have to stop on snow you should:	1	1077		17	-01	-03	-02	NA	02	13	-01	03
a. Hold the steering wheel tightly			43									
b. Avoid signalling the driver behind you			02									
c. Try to stop on snow that is hard packed			54									
378. If you must make an emergency stop on snow and you start to skid you should:	2	991		33	-03	-01	-04	NA	25	-02	-02	-08
a. Drive into a snowdrift			40									
b. Turn off the engine			29									
c. Shift into neutral			30									
380. If ice is beginning to melt on the road, you:	1	1075		35	08	03	-01	NA	01	00	-14	-02
a. Should avoid using the passing lane on a highway			65									
b. Should resume normal speed and allow normal following distance			33									
c. Need not worry about road conditions in bright sunlight areas			03									
383. If you must stop on ice:	1	1077		42	-02	-01	00	NA	18	03	-18	-13
a. Hold your foot firmly on the brake pedal until you have stopped			28									
b. Make steering corrections when your foot is off the brake			41									
c. Hold the steering wheel loosely so the wheels will not lock in a skid			28									
384. When you want to stop or slow down when driving on ice you should:	1	1077		36	00	-02	02	NA	-02	05	01	08
a. Use steady pressure on the brake			34									
b. Apply the gas and brake at the same time			04									
c. Pump the brakes			61									
385. When stopping on ice with a manual shift vehicle you should:	1	1077		34	-04	01	-08	NA	31	05	-12	-22
a. Depress the clutch before using the brake			20									
b. Shift into neutral and brake gently			26									
c. Depress the clutch when the vehicle is almost stopped			52									

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
380.R If you come to a sand or snow drift on the road it is best to:	1	1064		41	05	03	04	NA	03	07	-14	00
a. Slow down and go through it			14									
b. Drive around it if possible			66									
c. Shift to a lower gear and drive through			20									
381. When driving on a road where there is no shoulder or only a narrow, soft one:	1	1064		28	00	03	-01	NA	13	-13	00	-10
a. Spend more time checking your rearview mirror			04									
b. Keep in the left lane			15									
c. Pay more attention to your steering			81									
382. If 1 or 2 of your wheels drop off the edge of the pavement:	1	1076		23	07	05	-03	[illegible]	13	-01	-08	-01
a. Increase your speed and drive back on the road			03									
b. Hold the steering wheel loosely			04									
c. Ease back onto the road after slowing down			92									
382. Duplicate of above	3	1088	02 02 95	24	00	01	00	03	01	-04	-10	-04
382. Duplicate of above	5	936	03 05 92	17	NA	NA	NA	NA	03	02	-08	-04
383. If your vehicle has run off the road onto the shoulder you should:	2	993		29	06	06	03	NA	06	01	-04	-03
a. Shift quickly to a lower gear			08									
b. Gradually ease your foot off the gas pedal			92									
c. Brake with heavy constant pressure on the brake pedal			00									

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
393. Duplicate of above	3	1078	09 84 07	20	06	06	01	03	03	-05	-03	-07
393. Duplicate of above	5	938	11 81 08	25	NA	NA	NA	NA	-01	-04	02	-03
393. If your vehicle has run off the road onto the shoulder you should: a. Gradually ease your foot off the gas pedal b. Brake with heavy constant pressure on the brake pedal c. Shift quickly to a lower gear	1	1075	84 08 08	17	08	07	08	NA	-01	-03	-04	03
394. If you are on a soft shoulder and need to slow down: a. Apply steady increasing pressure on the brake pedal b. Turn sharply onto the road and then apply the brakes c. Pump the brake pedal gently	1	1068	43 03 54	14	-03	-02	03	NA	-04	-03	03	03
395. Before driving from the shoulder onto the road you should always: a. Apply the brake when your front wheels are on the road b. Decrease your speed c. Check the road for traffic	2	998	00 04 96	18	-04	-04	-01	NA	-02	03	-01	05
396.M If you want to return to the road from a soft shoulder: a. Drive along the shoulder until you are going as fast as the traffic on the road b. Move slowly onto the road and wave traffic around you c. Slow down then turn your wheels sharply to climb the pavement edge	1	1076	39 33 28	14	-01	-01	05	NA	-05	-07	01	04

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
398. If you have to drive into a lane used by oncoming traffic to avoid an object in your lane:	1	1000		26	00	-01	03	NA	-01	-08	-12	00
a. Wait for a break in the traffic			68									
b. Drive around the object by using the shoulder			15									
c. Stop and move the object off the road, if possible			17									
400. If you come to an area where there is road repair going on you should:	2	1008		20	-03	-01	-05	NA	01	10	-06	-07
a. Move over to the right and stay near the shoulder			01									
b. Stop and wait for instructions			02									
c. Watch for flagmen and instructions			96									
401. If bad weather makes it hard for you to see you should:	2	1013		51	-03	02	-07	NA	23	08	-32	-21
a. Increase your following distance			79									
b. Drive in the lane closest to oncoming traffic			05									
c. Turn your lights on high beam			16									
406. When it is very foggy during the day or night you should:	2	985		38	-01	03	-05	NA	22	03	-11	-17
a. Slow down			88									
b. Put on your high beam lights			12									
c. Follow closer to other vehicles			00									
407. When driving through fog at night, you should use your:	2	998		29	-07	-02	-10	NA	26	01	-10	-18
a. High beam headlights			19									
b. Parking lights			01									
c. Low beam headlights			80									
408. When driving in heavy fog during the day you should use:	2	998		28	00	02	00	NA	07	03	-03	-09
a. High beam headlights			11									
b. Parking lights			05									
c. Low beam headlights			84									

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
410. When glare from the sun makes it hard to see you should: a. Avoid using the visor since it will cut down on your vision b. Put on your sunglasses c. Look far ahead on the road	2	1002	06 69 24	27	-06	-05	02	NA	03	-08	-10	-04
414. When driving in a high wind: a. Make changes in your steering to match wind changes b. Drive a bit faster than under normal conditions c. Keep your windows open more than usual	1	1064	93 02 05	26	04	05	04	NA	-01	01	-06	-07
414. Duplicate of above	3	1078	90 01 08	22	-03	00	01	03	02	02	-03	-04
418. If your gas pedal gets stuck in heavy traffic and you cannot unstick it with your foot: a. Shift into neutral b. Apply your brakes as hard as possible c. Turn off the engine	1	1068	28 10 61	18	02	02	02	NA	09	-11	04	-02
420. If your brakes begin to fade when going down a steep hill you should: a. Pull off the road if possible and let the brakes cool off b. Drive in a zig-zag manner to reduce speed c. Shut off the engine and use the parking brake	1	1068	73 02 25	35	02	04	-02	NA	21	-06	-05	-14

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
431. If normal pressure on the power brake fails to slow your vehicle:	2	990		16	-00	-05	01	NA	03	-01	-00	-01
a. Keep constant pressure on the brake until you begin to slow down			20									
b. Press the pedal down as far as it will go			08									
c. Pump the brake up and down			71									
432. If your brakes fail completely you should:	1	1068		43	-08	-02	-09	NA	27	01	-11	-12
a. Pump the brake, slowly apply parking brake and shift into a lower gear			61									
b. Shift into neutral, turn off engine, and slowly apply parking brake			28									
c. Press the brake all the way down, shift into neutral, and apply the parking brake			11									
433. If your brakes fail when driving in traffic you should not:	1	1068		15	-03	-04	00	NA	-03	00	03	05
a. Steer onto a shoulder, curb, or field			13									
b. Continue on the road until you coast to a stop			51									
c. Look for brush or a guardrail to sideswipe			34									
434. If your brakes do not work you should:	2	1008		13	00	03	03	NA	-07	-06	03	02
a. Pull off of the road onto a shoulder or field			77									
b. Steer into a guard rail or post			01									
c. Continue on road until you coast to a stop			21									
435. If your brakes are wet after driving through deep water:	1	1066		36	-03	-01	-05	NA	20	01	-03	-10
a. Pull onto the shoulder and put your hood up			11									
b. Brake very hard the next time you need to stop			08									
c. Keep slight pressure on the brake while driving			81									

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Number and item		Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
					Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
426.	If your headlights go out while you are driving at night you should first:	1	1068		36	-02	02	-01	NA	-04	18	-20	-09
	a. Stay on the road and come to a stop in the right lane			32									
	b. Move over so that one set of wheels are on the lane lines			13									
	c. Hit the dimmer switch several times			54									
427.	If your headlights go out while you are driving at night you should:	1	1068		26	-01	02	-02	NA	-04	08	-05	-05
	a. Maintain your speed and quickly steer off the road			35									
	b. Try your parking lights and emergency flashers			59									
	c. Tap your brakes every few seconds and continue driving until you get to a service station			05									
428.	If the engine stalls and the power steering fails as you are driving you should:	2	1002		29	-02	02	01	NA	04	04	-05	-06
	a. Turn the steering wheel very gradually			31									
	b. Avoid using the brakes			06									
	c. Try to restart the engine			62									
429.	If your steering fails as you are driving you should:	1	1076		20	02	03	-02	NA	15	-11	01	-05
	a. Come to a stop as quickly as possible			59									
	b. Take your foot off the gas and coast to a stop			39									
	c. Turn the wheel back and forth to tighten the steering			02									
433.	If you have a blowout while driving you should:	2	991		18	-03	00	-07	NA	-03	04	05	00
	a. Apply the brakes as soon as you notice the blowout			05									
	b. Keep going at the same speed until you can get off the road			17									
	c. Look for a safe place to drive off the road			78									

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
436. To help prevent skids, you should:	1	1077		25	04	05	06	[illegible]	-01	00	-07	00
a. Be alert for slippery road conditions			94									
b. Slow down quickly on slippery surfaces			05									
c. Aim for rough spots in the road			01									
436. Duplicate of above	3	1078	93 06 01	20	-01	00	02	00	-03	03	-11	-03
436. Duplicate of above	5	918	93 06 01	26	[illegible]	[illegible]	[illegible]	[illegible]	02	01	-08	-09
437. You are most likely to skid when:	2	1000		33	-02	-01	-09	[illegible]	03	10	-18	-02
a. On asphalt roads, in tunnels, and when it is windy			01									
b. On curves, sand or gravel roads, and when making quick stops			97									
c. Making left turns, driving on bridges, and when speeding up			03									
439. To turn on a slippery road you should:	2	993		17	01	00	-08	[illegible]	05	06	-01	-06
a. Turn your wheels more than usual			00									
b. Take the corner in a controlled skid			01									
c. Slow down gradually before the turn			99									
442.M When you begin to skid, the first thing you should do is to gradually:	1	1075		21	-06	-03	-03	[illegible]	03	16	-09	-03
a. Apply the brakes			06									
b. Steer in the direction of the skid			46									
c. Take your foot off the gas pedal			52									
442.M When you begin to skid, the first thing you should do is to gradually:	2	993		27	03	02	-13	[illegible]	02	14	-05	-04
a. Steer in the direction of the skid			46									
b. Steer for the shoulder of the road			00									
c. Take your foot off the gas pedal			53									

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
443. In order to get out of a skid you should:	1	1077		26	-01	-02	02	NA	03	-05	-01	-01
a. Keep your foot off the brake			75									
b. Let the steering wheel slip through your hands			09									
c. Keep a constant pressure on the gas pedal			15									
445. If the rear of your vehicle is skidding to the left you should:	1	1064		40	08	08	04	NA	10	08	-12	-02
a. Turn the top of your steering wheel to the left			65									
b. Hold your steering wheel from moving until out of the skid			11									
c. Turn the top of your steering wheel to the right			22									
446. Duplicate of above	3	1061		38	09	10	08	12	10	00	-21	-14
			69									
			11									
			20									
447. As you are coming out of a skid it is most important to:	2	991		25	00	02	-06	NA	05	-02	-08	-06
a. Begin pumping the brake until you come to a complete stop			25									
b. Start to speed up slightly and steer your vehicle toward the right edge of the road			27									
c. Turn the steering wheel in the opposite direction as your vehicle approaches the desired heading			48									
448. When you are coming out of a skid you should begin to straighten your wheels:	1	1064		25	00	03	-04	NA	12	-02	-08	-07
a. Just before heading in the desired direction			63									
b. As soon as your speed drops below 10 mph			15									
c. After you have come to a complete stop			22									

Number and item		Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
					Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
449.N	When coming out of a skid you should apply your brakes only:	1	1066		27	-01	02	-02	NA	00	10	-12	-03
	a. After you have been heading in the desired direction for several seconds			09									
	b. After you have steering control of the vehicle			75									
	c. If you have to come to a stop			15									
450.	When coming out of a skid on a dry road you should apply your brakes:	1	1077		25	-02	-05	00	NA	04	-01	05	02
	a. By using increasing pressure until you stop			49									
	b. In a series of quick hard jabs			16									
	c. By using constant pressure until you stop			34									
451.	When coming out of a skid on a slippery road you should apply your brakes:	1	1077		31	02	01	04	NA	00	-07	01	02
	a. In a series of firm gentle pumping motions			78									
	b. By using increasing pressure until you stop			14									
	c. By using constant pressure until you stop			08									
451.	Duplicate of above	3	1061	78 14 07	20	00	02	06	08	02	-06	-07	-03
451.	Duplicate of above	5	954	82 10 06	20	NA	NA	NA	NA	04	-05	-04	-12
453.	When driving in the downtown area of a city you should:	2	998		23	03	00	00	NA	-06	04	-04	04
	a. Blow your horn when passing any other vehicles			03									
	b. Reduce distractions in the vehicle			72									
	c. Carefully watch activities on the sidewalk			25									

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
454. When driving in an area of a city where there are many store lights you should:	2	998		43	-01	00	-01	NA	01	07	-16	-04
a. Wear sunglasses or put visor down			01									
b. Look for traffic lights hidden by lights from signs			66									
c. Keep your eyes on the road right in front of you			32									
460. When in a residential area where there are no posted speed limits you should drive around:	1	1072		33	-05	-03	00	NA	02	03	-10	-08
a. 15 mph			14									
b. 25 mph			79									
c. 35 mph			07									
461. When driving near homes:	2	993		28	00	02	03	NA	11	-05	-14	-07
a. Stop at each cross street even if there are no stop signs			08									
b. Watch for children darting into the street			91									
c. Drive slightly above 30 MPH			01									
463. If it looks like you might hit a pedestrian and you notice a vehicle close behind you:	2	1005		30	-02	01	02	NA	17	-07	00	-07
a. Blow your horn to warn others, then steer for the sidewalk			19									
b. Try to hit the person with the side of the vehicle			00									
c. Stop short even if you will be hit from behind			81									
464. The most difficult thing to predict is the movement of:	2	1008		28	-02	-01	-02	NA	16	-01	-08	-12
a. Motorcycles			16									
b. Cars			06									
c. Pedestrians			78									

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
465. When driving near schools, playgrounds and parks: a. Stay close to the right curb b. Drive no faster than 10 MPH c. Drive more carefully than usual	3	998	00 17 82	36	06	03	06	NA	02	01	-15	-03
465. Duplicate of above	3	1078	01 14 85	31	04	04	01	04	04	-03	-16	-03
465. Duplicate of above	4	1170	00 19 80	33	-02	01	00	04	10	01	-09	-12
465. Duplicate of above	5	938	00 19 81	43	NA	NA	NA	NA	10	06	03	03
466. When coming to an intersection or a winding or narrow area on a highway you should: a. Drive close to the right shoulder b. Slow down c. Begin to pass slower moving vehicles	1	1073	11 88 00	29	-01	01	-04	NA	06	12	-13	-08
467. When driving on a highway you should: a. Stop on the median if you want to rest b. Watch for hidden traffic, animals and pedestrians c. Drive as close to the right edge of the road as possible	1	1068	05 73 21	34	-01	-01	-05	NA	-01	13	-12	-06

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
468. When crossing a median on a highway you should be careful because:	1	1072		19	01	02	03	NA	02	-01	03	-01
a. Oncoming traffic may not be able to see you			53									
b. Other vehicles may be trying to cross at the same point			23									
c. Medians don't provide enough room for stopping without blocking traffic			22									
469. Unmarked intersections, curves, sharp turns, poor road conditions and slow-moving farm vehicles should:	1	1077		39	02	05	04	NA	03	-07	-15	-07
a. All be expected on country highways			78									
b. Serve to warn you that you are near a small town			13									
c. Cause you to drive in the passing lane			09									
469. Duplicate of above	3	1061	87 07 06	39	-02	01	04	10	08	-05	-14	-10
470. Because there is often slow-moving traffic on country highways you should:	1	1072		42	-01	03	00	NA	11	05	-18	-08
a. Be ready to adjust your speed to the speed of traffic			86									
b. Stay in the left lane and drive at the speed limit			07									
c. Generally drive 10-15 mph under the speed limit in order to be safe			08									
471. When driving through mountains you should:	1	1080		22	01	03	04	NA	01	01	-09	-02
a. Stay close to the right edge of the road to be away from oncoming traffic			99									
b. Speed up going over hills			01									
c. Put the vehicle in neutral and coast down hills in order to save gas			00									

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
473.M When driving in the mountains:	2	978		27	01	02	02	NA	10	02	-07	-06
a. Put your bright lights on when going around a curve at night			13									
b. Coast downhill in neutral			00									
c. Look for speed limit and warning signs			87									
474. Before entering a freeway it is most important to check for:	2	997		28	01	06	07	NA	08	-03	-12	-08
a. Speed limit signs			03									
b. Lane markings			06									
c. DO NOT ENTER signs			90									
475. When deciding how fast you should go in order to enter a freeway, you need not consider:	2	998		32	03	04	00	NA	01	-05	-08	-04
a. How sharply curved the entrance is			06									
b. Whether the entrance is on the right or left side of the freeway			31									
c. How much traffic there is on the entrance behind you			64									
476. When entering a freeway from the right you should:	1	1068		29	-03	-01	03	NA	05	03	-09	-05
a. Check back over your left shoulder for traffic			70									
b. Look straight ahead and use your mirrors			13									
c. Check back over your right shoulder for traffic			17									
477. When you are entering a freeway you should first:	2	998		33	-06	-01	-08	NA	04	10	-09	-10
a. Look for speed limit signs			03									
b. Note the speed and location of vehicles on the freeway			95									
c. Move over to the left in order to pass slower moving vehicles			02									

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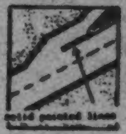
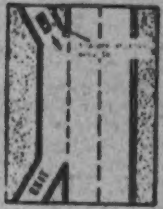
Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
478.N When entering a freeway behind several other vehicles it is most important to:	2	998		41	-05	-04	-03	NA	05	09	-16	-02
a. Keep your eyes on the vehicles in back of you			03									
b. Turn on your signal lights as soon as you are on the entrance			10									
c. Be alert to the actions of the vehicle in front of you			87									
481. When on a short entrance to a freeway where there is no acceleration lane:	2	993		28	-05	-03	-05	NA	-04	-01	-06	-04
a. Come to a complete stop before entering the freeway			16									
b. Enter the far right traffic lane and speed up to the flow of traffic there			54									
c. Speed up on the entrance only after you have found a gap in traffic			30									
482. When on a short freeway entrance it is most important to:	2	1002		18	-02	-02	05	NA	-06	-06	00	00
a. Speed up as much as possible before coming to the end of the entrance			15									
b. Turn on your signal lights as soon as you start down the entrance			18									
c. Check ahead for vehicles that may be slowing down or stopping			67									
485. When entering a freeway from a left entrance:	2	993		29	-01	-03	08	NA	-07	-08	-07	03
a. Enter the road at a speed faster than the speed limit			03									
b. Edge slowly onto the freeway driving on the shoulder in order to speed up			19									
c. Compare what you see in your mirrors with what you see when looking over your shoulder			78									

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
487. If you do not see a break in the freeway traffic while driving down the entrance: a. Turn your head and keep your eyes on the freeway until you see a break in traffic b. Watch the vehicle in front of you on the entrance and enter the freeway when it does c. Watch the vehicles in front of you and check the freeway traffic with your mirrors	2	1080	41 01 57	16	00	02	-05	NA	-04	24	-09	-07
488. In general you should stop before entering a freeway when: a. There is no special lane to use in order to speed up b. The entrance is short or has a low speed limit c. Waiting for a break in the traffic	1	1066	21 06 74	05	00	-03	05	NA	-03	-10	00	06
491. The solid painted lines that divide the entrance and the freeway:  solid painted lines a. May be crossed when entering the freeway b. Mean the same as broken lines on the main road c. Should not be crossed when entering the freeway	2	1008	03 02 95	20	-05	-03	-02	NA	04	-01	-06	-04
492. When on an entrance to a freeway it is important to: a. Watch the vehicle in front and the traffic on the freeway b. Slow down to make sure there is enough room to enter c. Move quickly onto the freeway	1	1069	60 30 10	42	04	05	01	NA	07	20	-22	-07
492. Duplicate of above	3	1078	56 34 10	35	03	07	02	06	06	20	-23	-14

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
492. Duplicate of above	5	940	61 24 14	29	NA	NA	NA	NA	10	03	-08	-11
494. When entering a freeway, it is most important to: a. Quickly increase your speed up to the maximum posted speed limit b. Adjust your speed to that of the vehicle in front of you c. Move into the middle or left lane as soon as possible	1	1075	08 86 06	37	01	02	05	NA	03	03	-19	00
494. Duplicate of above	3	1058	11 81 08	33	01	03	04	12	04	00	-14	-11
495. When you enter a freeway you should: a. Stay in the entrance lane until it ends b. Drive smoothly onto the road and quickly move into the middle lane c. Drive smoothly into the right hand lane	1	1072	20 04 76	31	01	02	-01	NA	07	01	-05	-04
496. When entering a freeway from an entrance with an acceleration lane, you should: a. Stop to check for traffic at the end of the entrance b. Enter the freeway at top speed and slow down to the speed limit afterward c. Use the acceleration lane to get up to the speed of the freeway traffic	1	1072	12 01 87	44	-04	-02	-02	NA	06	12	-18	-06

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
497. If there is a vehicle ahead of you in the acceleration lane it is best to: a. Wait until it enters the freeway before you do b. Stay close behind it and merge with the freeway traffic when it does c. Stop and allow it to merge with the freeway traffic first	1	1073	69 10 20	44	-06	-01	00	NA	09	12	-18	-06
498. When entering a freeway you should:  a. Watch for vehicles leaving the freeway that may cross your path b. Merge with freeway traffic at the beginning of the entrance lane c. Stay in the entrance lane as long as possible	1	1068	76 20 04	41	01	03	-06	NA	06	14	-18	-06
500.M If you are entering a freeway and there is no break in the traffic: a. Slow down at the beginning of the acceleration lane but avoid stopping b. Stop at the beginning of the acceleration lane c. Continue as you would if there were a break and hope that one appears	1	1075	60 38 02	24	02	03	03	NA	-01	13	-06	00
500. Duplicate of above	3	1061	61 37 03	17	01	00	04	03	-02	20	-08	00
500. Duplicate of above	5	940	73 23 03	18	NA	NA	NA	NA	00	23	09	10

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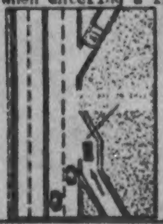
Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
500.M If you are entering a freeway and there is no break in the traffic: a. Continue as you would if there were a break and hope that one appears b. Drive along the shoulder until you can pull onto the freeway c. Slow down at the beginning of the acceleration lane but avoid stopping	2	1013	01 17 81	35	-02	-01	-03	NA	08	08	-06	-13
502.M When you enter a freeway from an acceleration lane you should be driving at: a. The legal speed limit on the freeway b. About the same speed as the vehicle you want to enter behind c. About 10 mph below the legal speed limit on the freeway	1	1076	11 71 18	38	03	05	-01	NA	15	-06	-18	-09
502. Duplicate of above	3	1061	17 65 17	48	07	13	05	11	15	-09	-26	-18
502. Duplicate of above	4	1171	18 63 19	47	04	04	-01	-01	17	-08	-16	-13
502. Duplicate of above	5	940	26 56 16	39	NA	NA	NA	NA	13	-03	-08	-09
503. When entering a free[illegible]y you should:  a. Stay in the right lane until you are going as fast as other traffic b. Move slowly to the left until the other vehicle have to slow down to let you enter c. Move into the faster lanes as soon as there is a break in traffic	1	1072	65 04 31	32	00	00	-02	NA	05	11	-11	-02

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
504. After you enter a freeway you should: a. Move into the fastest lane as soon as possible b. Drive about the same speed as other traffic c. Signal faster moving traffic to pass you	1	1080	03 94 03	33	02	04	03	NA	00	00	-14	-04
504. Duplicate of above	3	1078	03 93 03	32	-01	01	03	06	00	07	-18	-06
504. Duplicate of above	5	940	05 87 07	40	NA	NA	NA	NA	-01	-03	-04	-07
506. After entering a freeway it is most important to: a. Move from the right lane to the middle or left lane as soon as possible b. Check for faster moving traffic behind you and adjust your speed c. Increase your speed until you are driving at the posted speed limit	1	1075	13 69 18	37	01	02	05	NA	06	-01	-15	-03
507. You should select a lane on the freeway where vehicles are traveling: a. Slightly slower than you want to go b. At the legal speed limit c. At the same speed you want to go	1	1072	02 42 56	51	01	02	08	NA	04	06	-32	-07
507. Duplicate of above	1	1080	01 47 51	46	01	01	09	NA	02	05	-29	-01

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
508. Generally you should drive in a lane on the freeway:	2	1013		24	02	03	01	NA	-04	06	-12	05
a. Where there are no trucks or busses			04									
b. That has the least traffic in it			07									
c. Where you can maintain a constant speed			89									
511. When driving on a freeway you should:	2	997		30	07	07	00	NA	02	09	-10	-09
a. Pay attention to the traffic well ahead of you and around you			96									
b. Pay attention only to the vehicle ahead and the vehicle behind you			04									
c. Drive faster than the vehicles around you			00									
512. When passing a car that is driving behind a slower moving vehicle, you should:	1	1068		35	04	05	-04	NA	10	03	-11	-10
a. Pass on the right, if possible			09									
b. Be careful because the other car may cut in front of you			88									
c. Go 5 to 10 mph above the posted speed limit			02									
512. Duplicate of above	3	1061	06 91 03	41	08	10	00	03	15	01	-19	-12
512. Duplicate of above	5	940	16 78 06	36	NA	NA	NA	NA	22	-13	-13	-18
513. When driving on a freeway you should:	1	1068		14	-02	-04	03	NA	01	-04	-01	01
a. Check the lanes next to you for vehicles			33									
b. Keep your eyes forcused 5 to 10 vehicle lengths ahead of you			60									
c. Turn around to look behind instead of using the outside mirror			07									

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
514. While on a freeway you should check the vehicles behind you from time to time by: a. Looking over your left shoulder b. Looking over your right shoulder c. Watching your mirrors	2	1005	01 01 97	22	00	-01	03	NA	01	07	-12	-08
515. When driving in heavy afternoon city traffic on a freeway you should: a. Drive with more care since many accidents occur at this time b. Try not to use your mirrors, and look at the traffic ahead instead c. Act quickly so that you only keep a small space between you and the vehicle in front	1	1077	95 03 02	30	01	02	01	NA	00	02	-19	-05
516. When approaching valleys and tops of hills on freeways you should: a. Pass slower moving vehicles b. Drive cautiously because you cannot see as far c. Stay far over to the left so as to avoid the shoulder	1	1077	04 94 02	24	02	04	08	NA	06	-05	-08	-05
516. Duplicate of above	3	1058	01 97 02	23	03	00	14	10	-02	01	-05	-03
516. Duplicate of above	5	940	04 93 03	25	NA	NA	NA	NA	03	-06	01	-01
517. If you are nearing an entrance ramp while driving on a freeway, you should: a. Signal for a left turn in case you have to pull over in a hurry b. Move to the left lane if safe to do so c. Slow down if safe to do so	1	1072	03 75 22	38	02	03	03	NA	-03	12	-12	-05

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
518. In order to make it easy for a vehicle to enter the freeway that you are on:	1	1072		27	-05	-01	-04	NA	05	10	-07	-08
a. Speed up to create a gap behind you			05									
b. Move to your left to create a gap for the entering vehicle			62									
c. Maintain your speed, staying in the right lane			32									
519.M If you are in the right lane of a freeway when passing an exit:	1	1072		31	-03	01	-05	NA	05	03	-15	-16
a. Watch for exiting vehicles and be ready to slow down			92									
b. Speed up and change lanes if the vehicle ahead signals that it is exiting			02									
c. Slow down and move to the left part of the lane			06									
520. When driving past exits on a freeway you should be most careful of:	1	1068		20	-01	00	02	NA	06	00	06	-03
a. Exiting vehicles because they may cut back onto the freeway			50									
b. Vehicles in the passing lane because they may slow down			11									
c. Vehicles slowing down or stopping on the freeway exit			39									
521. If you exit at the wrong place on a freeway you should:	2	998		24	-05	-04	-02	NA	-02	11	-07	-01
a. Back up onto the main freeway and continue when safe			04									
b. Continue until you are off the exit ramp and look for a way to re-enter the freeway			92									
c. Turn your vehicle around, stay on the shoulder and drive back down the exit ramp			04									

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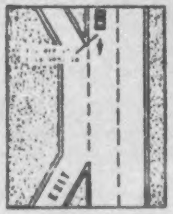
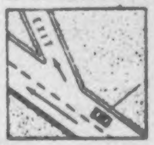
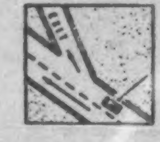
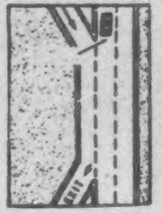
Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
522. If you get a flat tire on a freeway you should:	2	978		16	-01	00	-08	NA	04	09	04	-02
a. Pull over to the shoulder and make repairs			80									
b. Slow down and continue driving until the next exit			14									
c. Put on flashing lights and stop on the road			06									
523. When nearing your exit on a freeway you should:	1	1077		32	04	04	05	NA	-02	02	-13	-06
a. Watch for signs indicating whether the exit is on the left or right			53									
b. Flash your brake lights several times to warn the drivers behind you			06									
c. Start to slow down as soon as you see your exit			42									
525. When preparing to leave a freeway you should:	1	1068		40	01	03	03	NA	08	13	-18	-08
a. Look for the exit and deceleration lane			80									
b. Drive in the middle lane as long as possible			01									
c. Slow down before entering the deceleration lane			19									
526. If your freeway exit has a deceleration lane you should:	1	1072		47	-01	03	00	NA	09	14	-24	-13
a. Slow down as much as possible on the main road before entering the deceleration lane			34									
b. Move into the deceleration lane as soon as possible			63									
c. Drive alongside and pull in front of slower moving traffic in the deceleration lane			03									
528. When exiting from a freeway where there is a deceleration lane you should:	1	1075		35	00	-01	01	NA	06	14	-19	01
a. Drive at a constant speed on the deceleration lane			05									
b. Begin slowing down before entering the deceleration lane			62									
c. Judge how much you will have to slow down by the length and curve of the exit			33									

UNIVERSITY OF MICHIGAN H.S.R.I. ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
528. When exiting from a freeway where there is a deceleration lane you should:	2	997		32	-03	-02	-03	NA	09	18	-14	-10
a. Begin slowing down before entering the deceleration lane			63									
b. Drive at a constant speed on the deceleration lane			04									
c. Judge how much you will have to slow down by the length and curve of the exit			33									
529. As you are exiting from a freeway you should:	1	1075		22	-05	-03	-01	NA	06	05	-02	-06
a. Keep one foot over the brake and one on the gas pedal			03									
b. Turn off your turn signals			03									
c. Check your speedometer to make sure you are going at a safe exit speed			94									
530. If your exit on the freeway looks like this you should: 	1	1072		42	00	00	-05	NA	03	22	-21	00
a. Watch for vehicles entering the freeway and adjust your speed			79									
b. Slow down to exit speed on the main road and then move into the exit lane			20									
c. Move into the exit lane at the last possible moment			00									
531.M When leaving a freeway at an exit where there is no deceleration lane you should: 	1	1075		27	-01	01	03	NA	09	-10	-12	-06
a. Slow down on the shoulder			05									
b. Slow down only as much as necessary on the freeway			77									
c. Drive at your regular freeway speed until you are on the exit			17									

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
531.M When leaving a freeway at an exit where there is no deceleration lane you should:  a. Drive at your regular freeway speed until you are on the exit b. Signal and come to a gradual stop just before the exit c. Slow down only as much as necessary on the freeway	2	1013	 13 06 81	34	02	03	-04	NA	09	-05	-15	-07
532. If there is a freeway entrance just before your exit you: a. Should wait as long as possible before moving into the exit lane b. Will probably have to speed up in order to be able to exit c. Should watch for vehicles entering or leaving the freeway	1	1068	 03 01 96	23	00	01	-03	NA	00	03	-14	-08
533.M If there is a freeway entrance just before your exit, you should:  a. Be prepared to change your speed so that entering traffic can merge b. Signal at least 1 mile before your exit c. Stay closer than usual to the vehicle ahead of you	1	1075	 93 07 00	35	02	02	05	NA	05	10	-18	-03
533. Duplicate of above	3	1058	91 09 00	37	02	03	06	09	08	04	-17	-04

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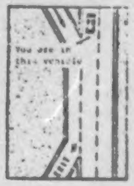
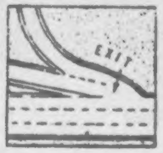
Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
533. Duplicate of above	5	926	90 09 01	29	NA	NA	NA	NA	07	05	-08	-08
533.M If there is a freeway entrance just before your exit you should:  a. Signal at least 1 mile before your exit b. Be prepared to change your speed so that entering traffic can merge c. Drive in the left lane until you pass the entrance	2	985	04 89 06	42	01	05	-04	NA	12	06	-16	-08
534. When on a freeway exit, you should: a. Keep your foot off the gas pedal b. Stay near the center of the exit lane c. Drive about 20 mph less than your freeway speed	1	1072	10 52 37	34	04	07	-03	NA	17	01	-09	-12
535. If you are on a freeway exit that looks like this, you should:  a. Keep your right turn signals on until you decide what to do b. Watch for vehicles changing lanes c. Drive 10-15 mph below the speed limit posted on the exit	1	1068	15 79 05	33	00	01	04	NA	-03	11	-17	01

Number and item		Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
					Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
536.M	When nearing the end of a freeway exit you should generally:	1	1075		22	-10	-08	-05	NA	09	17	-15	-03
	a. Slow down and prepare to stop			77									
	b. Be careful of merging traffic			21									
	c. Move as far to the left as possible			02									
539.	If you see a vehicle stopped on the shoulder with its hood up, you should:	1	1072		23	01	03	02	NA	00	02	-06	-05
	a. Blow your horn to warn its driver			03									
	b. Turn on emergency flashers to warn others and continue at same speed			11									
	c. Slow down and move to the left part of the lane			86									
539.	Duplicate of above	3	1061	03 06 92	27	04	05	-03	00	07	10	-13	-09
540.	When passing a parked vehicle you should:	1	1080		38	01	03	-05	NA	08	04	-16	-07
	a. Leave room in case a door opens or a pedestrian steps out			85									
	b. Continue driving at the speed limit since you have the right-of-way			05									
	c. Slow down to 15 mph until you are past all parked vehicles			10									
540.	Duplicate of above	3	1061	83 05 11	43	05	09	00	03	15	06	-19	-19
540.	Duplicate of above	4	1171	80 07 13	38	01	01	-03	-03	17	00	-09	-14

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
540. Duplicate of above	5	938	81 05 14	35	NA	NA	NA	NA	09	-01	-05	-07
541. When you see the door of a parked vehicle begin to open in front of you: a. Speed up in order to get past the parked vehicle b. Flash your lights or blow the horn as a warning c. Come to a complete stop and signal the people in the parked vehicle that they can exit	2	998	00 60 40	30	-03	-03	-03	NA	08	01	-09	-06
542. When driving near parked vehicles you should not: a. Drive far enough from parked vehicles to avoid hitting any doors that might suddenly open b. Look for parked vehicles with exhaust smoke coming from then or back-up or brake lights on c. Drive close to the vehicle in front to prevent children from running out between the vehicles	2	1002	18 09 72	40	-07	-05	-04	NA	02	16	-24	-08
544. When a vehicle is going into or out of a parking space in front of you: a. Continue at the same speed and signal the vehicle to wait b. Speed up to pass the vehicle c. Prepare to stop or change lanes if necessary	1	1080	01 00 99	21	02	03	-03	NA	01	01	-12	00
545. If you decide to stop to let a vehicle pull into a parking space, you should: a. Move into the next lane but wait until it has parked before continuing b. Stop several vehicle lengths behind it c. Come to a full stop directly behind it	2	985	03 86 10	41	-03	00	03	NA	08	11	-14	-10

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
546. When you change lanes to get by a parked vehicle about to enter the road:	1	1075		23	03	03	04	NA	-03	07	-10	-02
a. Make sure the driver of the parked vehicle knows you are passing			85									
b. Speed up and get by it before its driver has a chance to move			01									
c. Stay close to the parked vehicle and drive by slowly			13									
546. Duplicate of above	3	1058	88 01 11	27	07	08	09	06	-06	08	-11	03
548. When being passed on a 2 lane road you should:	1	1080		26	00	01	-05	NA	01	10	-05	-01
a. Maintain your speed and position in the lane			70									
b. Slow down sharply and keep to the right			29									
c. Slow down and drive slightly to the left			01									
550. When coming to a vehicle that is about to pull out of a parking space along the curb:	1	1080		31	-03	00	-10	NA	07	10	-09	-09
a. Leave at least 6 feet between you and the vehicle when passing			81									
b. Speed up and get by it before its driver has a chance to move			04									
c. Move into the lanes used by the oncoming traffic if they are not crowded			16									
551. If a passing vehicle signals that he must cut in front of you, you should:	2	991		21	-04	-04	00	NA	03	-01	-08	-09
a. Prepare to speed up to let him get in behind you			00									
b. Continue at the same speed and maintain your position			04									
c. Prepare to slow down to allow room			96									

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
552. If a vehicle passing you is in the way of oncoming traffic you should:	2	998		41	-05	-04	-08	NA	14	09	-21	-05
a. Signal the passing vehicle to cut in front of you			27									
b. Cut in front of the passing vehicle so it can get into your lane			02									
c. Slow down if he speeds up and speed up if he slows down			71									
553. If a passing vehicle has to cut in front of you to avoid oncoming traffic:	1	1080		40	01	03	02	NA	14	01	-14	-10
a. Leave the road by moving left			14									
b. Loosen your grip on the steering wheel			04									
c. Alert your passengers			79									
554. If a passing vehicle has to cut in front of you to avoid oncoming traffic:	1	1080		33	-05	-03	-07	NA	09	16	-20	-06
a. Speed up and let the other vehicle pull in behind you			04									
b. Pull off the road as soon as possible			08									
c. Slow down and check the shoulder			88									
556. If a vehicle pulls up alongside you and then decides not to pass, you should:	1	1075		19	01	-01	02	NA	-01	16	-10	-05
a. Continue at the same speed			68									
b. Speed up			09									
c. Slow down			23									
557.M When there is a vehicle close behind you it is best to use:	1	1076		22	-04	-03	-01	NA	-04	07	-13	-01
a. Both hand and mechanical signals for turning and stopping			91									
b. Only hand signals for turning and stopping			03									
c. Only mechanical signals for turning and stopping			05									

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
559. You should not use your rearview mirrors to: a. Check how fast vehicles are approaching b. Estimate how far away vehicles are c. Judge how fast you are going	2	998	06 12 82	36	-03	-01	-02	NA	-01	09	-19	-08
560. If the vehicle behind you is following too close you should: a. Slow down and allow the other vehicle to pass b. Hit your brakes hard several times c. Drive off the road if possible	2	998	89 01 10	20	05	06	02	NA	06	-02	-01	-03
560.M If the vehicle behind you is following too close you should: a. Allow the other vehicle to pass b. Hit your brakes hard several times c. Drive off the road if possible	3	1061	94 01 05	22	08	08	03	03	05	07	-05	-07
560.M If the vehicle behind you is following too close you should: a. Slow down and allow the other vehicle to pass b. Hit your brakes hard several times c. Drive off the road if possible	5	954	80 01 18	17	NA	NA	NA	NA	04	-10	-17	-16
561. If you are being followed too closely while in the passing lane you should: a. Move to the right lane when it is safe to do so b. Slow down to warn the other vehicle he is too close c. Continue at the same speed but tap your brakes	1	1072	91 02 06	28	03	06	00	NA	03	02	-08	-11
561. Duplicate of above	3	1078	94 01 04	23	01	05	05	05	03	06	-11	-04

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
561. Duplicate of above	5	940	87 04 10	26	NA	NA	NA	NA	-01	-09	-16	-12
562. If the vehicle that is following you is weaving you should: a. Keep to the right, slow down, and pull off the road if necessary b. Turn on your emergency flashers and stay in front of him c. Pull over to the left and signal the driver to pass you	1	1072	89 04 07	25	04	05	-03	NA	06	-03	-09	-07
562. Duplicate of above	3	1078	93 04 03	19	02	02	-02	-04	06	-06	-07	01
562. Duplicate of above	5	940	84 04 12	31	NA	NA	NA	NA	10	-16	-17	-16
563. When you have to stop because of heavy traffic ahead you should: a. See if the vehicle behind can stop b. Signal to the driver ahead to make sure he knows you are there c. Move as far to the right as you can	1	1077	53 08 38	34	-06	-06	-05	NA	-01	12	-10	-08
564. If the vehicle behind you is not slowing down after you have stopped: a. Keep your foot on the brake even if there are no vehicles in front of you b. Warn other passengers c. Lean forward against the steering wheel	2	991	43 44 12	26	-04	-01	-02	NA	11	-02	-03	-06

Number and item		Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
					Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
565.	Generally you should drive:	1	1080		31	06	07	08	NA	10	-11	-08	-03
	a. Just to the left of the center line			05									
	b. As near as possible to the center line			14									
	c. Well to the right of the center line			81									
565.	Duplicate of above	3	1061	07 16 77	29	-01	00	08	09	08	-25	-06	-12
565.	Duplicate of above	5	954	10 24 65	25	NA	NA	NA	NA	00	-22	-31	-23
567.	When driving by oncoming traffic you should be especially alert for:	2	978		44	-03	00	-07	NA	06	10	-18	-11
	a. Flying stones and glare from headlights or reflected sun			18									
	b. Wind gusts, road irregularities, and vehicles crossing the center line			37									
	c. Traffic entering from side roads and vehicles parked on the shoulder			45									
568.	An oncoming vehicle is most likely to cross the center line when:	1	1068		44	-04	-02	-03	NA	04	14	-23	-10
	a. It is signaling for a right turn			13									
	b. There is a large distance between each of the oncoming vehicles			27									
	c. There is a slow moving or stopped vehicle in the oncoming lane			59									
570.	When approaching oncoming vehicles you should:	1	1077		10	-04	-04	00	NA	01	03	01	01
	a. Ignore oncoming vehicles that are driving with their right wheels off the road			02									
	b. Watch for oncoming vehicles crossing the center line at places where traffic merges			98									
	c. Increase your speed slightly so that your vehicle will not be affected by the wind			01									

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
571. If an oncoming vehicle is forced across the center line because of potholes or road repair:	1	1080		15	04	03	00	NA	-03	02	-04	-03
a. Slow down and move to the right, if possible b. Turn to the left to get around the oncoming vehicle c. Blow your horn and continue at normal speed			99 00 00									
573. If an oncoming vehicle crosses the center line and drives into your lane you should:	1	1075		35	01	02	00	NA	07	13	-17	-07
a. Stop as quickly as you can b. Drive into his lane if it is empty c. Slow down and steer to the right			09 05 86									
574. If a vehicle is heading toward you in your lane, you should attempt an emergency stop:	2	1068		27	03	03	00	NA	03	09	-21	-05
a. Only if there is enough room to stop and you cannot pull off the road b. Only if the oncoming driver does not seem to see you c. When the traffic behind you is 10 or more vehicle lengths away			67 18 14									
575. If a vehicle is coming straight at you and you cannot stop:	2	1008		17	02	01	-03	NA	-01	02	00	-02
a. Continue slowing down and hope that the driver will turn away b. Look for an open space to the right of the oncoming vehicle c. Turn off the engine and apply the brakes as hard as possible			03 93 04									
575. Duplicate of above	3	1058	04 92 04	14	-01	05	01	09	-05	13	-09	-01

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
575. Duplicate of above	4	1168	04 93 03	16	07	03	00	00	-05	05	-02	01
575. Duplicate of above	5	954	05 92 03	18	NA	NA	NA	NA	01	04	-04	-03
578. If you must leave the road to avoid an accident, you should look for a: a. Ditch b. Sign or pole c. Lawn or field	1	1064	10 07 83	36	04	03	01	NA	03	04	-20	02
578. Duplicate of above	3	1061	10 04 86	36	01	06	01	09	[illegible]	-01	-18	-07
578. Duplicate of above	5	954	10 05 84	29	NA	NA	NA	NA	03	-02	-07	-08
580. If it appears certain that you will be in a head-on crash you should: a. Put on your brakes and stay in the center of your lane b. Put your vehicle in neutral and coast into the oncoming vehicle c. Run off the road if at all possible	2	997	10 01 89	28	00	03	-03	NA	00	-04	-05	-07
581. When you must leave the road to avoid a head-on crash: a. Turn your wheels as gradually as possible b. Apply the brakes hard before leaving the road c. Keep the brake on until after you cross the edge of the shoulder	1	1076	67 06 26	25	07	05	03	NA	08	-08	-01	-08

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
584. If, after leaving the road, it is necessary to return to the road without stopping: a. Shift to neutral and keep your foot on the brake b. Gradually steer back towards the road c. Speed up to get back on the road quickly	2	1005	02 90 09	21	02	01	11	NA	-03	-16	-03	04
584. Duplicate of above	3	1078	02 86 11	27	05	05	03	02	01	-04	-08	-04
586. When driving behind another vehicle you should: a. Try to tell how fast you are approaching the other vehicle b. Drive at the speed limit even if you have to drive close to the other vehicle c. Flash your lights to let the other vehicle know you are following	1	1075	84 03 13	41	03	07	05	NA	-03	06	-20	00
586. Duplicate of above	3	1078	87 03 10	43	04	06	11	11	04	00	-14	-06
586. Duplicate of above	5	954	78 06 15	40	NA	NA	NA	NA	-03	05	-11	-12
588. You will most likely have to make frequent stops when driving behind: a. Postal.delivery vehicles and school busses b. Large moving vans and construction equipment c. Campers and vehicles towing trailers	1	1075	98 01 00	20	02	-03	-02	NA	-02	14	-13	-04

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
589. If you are behind a truck carrying inflammables near a railroad crossing:	2	998		18	07	05	01	NA	01	00	-07	03
a. Turn on your emergency flashers			01									
b. Be prepared to stop even if there is no train			98									
c. Pull halfway into the left lane so you can see around the truck			01									
591. When following busses or trucks carrying inflammable cargo you should:	1	1075		42	01	08	00	NA	19	-07	-10	-17
a. Move over to the left lane rather than following them in the same lane			36									
b. Expect them to stop at railroad crossings			60									
c. Be prepared to pull onto the shoulder if they begin slowing down			03									
592. It is most important to watch for vehicles up ahead making left turns from your lane because they may:	2	978		23	-04	-02	-05	NA	03	17	-12	-01
a. Slow down or stop			92									
b. Interfere with oncoming traffic			07									
c. Be driving too fast for conditions			01									
594. When slowing down behind another vehicle you should:	1	1075		40	02	03	00	NA	07	03	-14	00
a. Brake early as a signal to the vehicles behind you			91									
b. Not apply your brakes until you are within 3 car lengths of the vehicle			05									
c. Signal the vehicles behind you to pass			04									
594. Duplicate of above	3	1078	91 04 04	77	00	01	-02	02	07	04	-11	-08

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
594. Duplicate of above	4	1170	93 05 02	31	-02	02	-09	-06	11	03	-13	-13
594. Duplicate of above	5	938	88 07 04	36	NA	NA	NA	NA	06	-02	-07	-11
595. If there is a vehicle stopped on the road ahead of you and you decide to stop behind it: a. Stop well behind it so you can pass if necessary b. Get as close as possible to the stopped vehicle c. Leave 1 vehicle length between you and the other vehicle	1	1068	60 02 38	33	02	05	03	NA	04	-09	-08	-03
596. If a vehicle is stopped on the road it is most important to watch for: a. A police car nearby b. People getting out c. Unusual activity inside the vehicle	2	1008	02 97 01	32	-05	-04	-05	NA	04	10	-10	-04
597. It is most important to watch vehicles stopped on the road in front of you because: a. They may be disabled b. They may suddenly make a turn c. The police may be nearby	2	978	36 62 01	34	-05	-02	-07	NA	05	18	-15	-09
598. When driving in the left lane and you see a vehicle stopped in the right lane: a. Apply your brakes and try to stop behind the vehicle b. Hit the horn and stop in the left lane c. Check traffic behind and in front and pass if it is clear	1	1075	03 03 94	07	03	02	01	NA	06	-04	03	01

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
598. Duplicate of above	3	1078	02 01 97	08	05	00	02	00	-03	-12	04	06
598. Duplicate of above	5	940	05 02 93	16	NA	NA	NA	NA	-03	-02	-05	-07
599. If you cannot stop in time before hitting another vehicle, it is best to: a. Gradually slow down and then hit the other vehicle b. Try to steer around the vehicle and avoid braking hard c. Remove your foot from the gas and put on the brake as hard as possible	2	997	04 59 37	31	-02	00	-01	NA	-03	11	-07	01
600. An indication that a school bus is going to stop is not: a. Flashing lights on the bus b. A city bus stop sign c. A group of children on the sidewalk	2	997	13 69 18	44	-03	-01	-06	NA	04	15	-17	-09
601. If you notice flashing red or yellow lights on a vehicle ahead: a. Change lanes and pass the vehicle b. Slow down and prepare to stop c. Make a U-turn to avoid the situation ahead	2	998	03 97 00	08	-04	-04	-01	NA	07	-09	02	-02
602.M If you notice flashing red or yellow lights on a vehicle ahead you should: a. Continue at the same speed until you are past the vehicle b. Look for objects or people on the road c. Turn your bright lights on to warn that you are approaching	2	1005	03 94 03	24	03	03	05	NA	01	00	-08	-02

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
602. Duplicate of above	3	1061	04 93 03	25	00	-03	01	-01	00	-05	-09	-06
603. When you come to a bus stop: a. Clear the area quickly so you will not block the bus b. Come to a full stop and proceed when safe c. Watch for pedestrians crossing the street	1	1077	05 24 71	43	-07	-03	00	NA	15	15	-10	-12
605. When driving near crosswalks, intersections, or school crossings you should: a. Move into the left lane b. Watch for pedestrians c. Blow the horn and continue at the same speed	1	1077	00 100 00	20	-02	-02	-02	NA	03	-04	-04	01
606. If a person crosses the street in the middle of the block in front of you: a. Blow your horn and proceed b. Slow down and be prepared to stop c. Change lanes to get by him	2	1002	00 100 00	07	-02	-02	00	NA	05	02	-01	05
607. When driving in an area where there are many pedestrians it is most important to: a. Keep your speed down to 15 MPH b. Watch for an indication that they will enter the road c. Stop at every intersection and proceed when safe	2	978	41 43 15	41	-05	-02	-04	NA	11	12	-11	-08
608. You should slow down and be prepared to stop: a. When you approach a divided highway b. When you are crossing a large bridge c. When you see pedestrians walking toward the road	1	1077	11 01 88	24	-01	-01	00	NA	11	11	-01	-08

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
609. When driving by children playing or walking near the edge of the road you should:	2	993		13	-04	-01	08	NA	01	-09	-05	-02
a. Blow your horn and continue at the same speed			01									
b. Be ready to make a quick safe stop			98									
c. Drive close to the children so they will see you			01									
610. Pedestrians who have been drinking are:	2	1013		16	00	-02	-01	NA	06	-04	-02	-03
a. Less dangerous than sober pedestrians because they are more careful after drinking			01									
b. Not usually involved in accidents, but should be carefully watched			12									
c. Involved in a large number of fatal pedestrian-auto accidents			88									
611. When watching pedestrians you need not pay special attention to those who are:	1	1077		37	-03	-01	-03	NA	-01	15	-23	-07
a. Running			03									
b. Standing on the road			04									
c. Window shopping			93									
614. If an animal is in your lane and there are vehicles on both sides of you:	2	1013		18	-05	-05	01	NA	00	14	00	-02
a. Swerve to avoid hitting it			01									
b. Blow your horn and slow down			91									
c. Slam on your brakes hard			08									
615. If it looks like you may hit a pedestrian, the final thing to do is:	2	998		39	-08	-04	-12	NA	07	11	-21	-14
a. Blow your horn			13									
b. Swerve around the pedestrian			56									
c. Slow down by pumping the brake			30									
616. When approaching a traffic accident or fire you should:	2	997		33	-01	01	03	NA	03	07	-18	-01
a. Stop and offer your help to the police			05									
b. Slow down and watch for people near the scene			84									
c. Turn on your emergency flashers before you drive by			10									

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
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617. To be sure that you will stop in time on a slippery road surface: a. Follow other vehicles at a greater distance and begin slowing down well in advance b. Let some air out of your tires c. Apply the brakes harder than usual	1	1072	99 01 00	25	01	00	03	NA	-03	07	-11	03
618. If there is a bad accident and no one else is there you should: a. Stop at the scene in a safe spot off the road b. Slow down and pass cautiously c. Speed up rapidly and go for help	2	997	81 09 09	26	-01	00	-02	NA	12	13	-01	-05
619. You should turn on your headlights: a. At night and during the day only if it is raining b. Only between dusk and dawn c. In all conditions of darkness	2	991	04 04 92	27	01	03	05	NA	02	04	-14	-03
621. At night you should drive slow enough to be able to stop within: a. The distance lighted by your headlights b. 5 car lengths c. 10 seconds from the time you hit the brake	1	1068	67 23 09	41	03	05	10	NA	07	09	-21	-06
621. Duplicate of above	3	1061	74 19 07	42	04	07	06	09	15	05	-21	-12
621. Duplicate of above	4	1171	72 21 07	43	02	04	01	02	12	-01	-10	-10
621. Duplicate of above	5	940	77 15 08	39	NA	NA	NA	NA	01	10	02	03

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
623.M If when driving at night you have trouble seeing an object up ahead:	1	1068		27	00	01	03	NA	-05	14	-14	-04
a. Blink both your eyes several times			11									
b. Fix both eyes on the object			25									
c. Look slightly to one side of the object			64									
624. When driving at night:	1	1077		20	-05	-03	-07	NA	08	09	-02	-07
a. Keep your high beams on if traffic is light			14									
b. Turn on your inside light to rest your eyes			00									
c. Look beyond your headlights for vehicles and people			85									
625. At night you should:	2	1013		31	-01	00	-02	NA	09	06	-15	-12
a. Allow more distance for passing and stopping			95									
b. Use your bright lights if it is foggy			04									
c. Drive in the left part of your lane			01									
626. In order to stay alert and be able to see clearly at night you should:	1	1077		14	-03	-03	05	NA	-03	02	04	06
a. Keep fresh air coming into the vehicle			95									
b. Blink your eyes slowly several times			04									
c. Rub your eyes hard from time to time			00									
629.M If you are driving at night in a city and there are no speed limit signs:	1	1072		23	02	03	04	NA	01	-11	01	04
a. Drive no faster than 15 mph			02									
b. Drive no faster than 35 mph			37									
c. Drive no faster than 25 mph			61									
630. If the city streets are wet at night you should drive no faster than:	2	993		30	07	07	-01	NA	07	03	-04	-01
a. 15 MPH			18									
b. 25 MPH			70									
c. 35 MPH			11									

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Number and item		Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
630.	Duplicate of above	3	1058	18 69 12	25	00	00	-02	-03	08	11	-02	-07
631.	You need not dim your bright lights when:	1	1073		27	-02	01	00	NA	-05	05	-16	-04
	a. Following or passing another vehicle			09									
	b. Driving past pedestrians near the road			38									
	c. Slowing down for a turn			52									
633.	When you near an oncoming vehicle at night you should:	1	1072		31	-03	-03	04	NA	04	-07	-10	-06
	a. Slow down			63									
	b. Flash your headlights			12									
	c. Stay in the center or left part of your lane			25									
634.	If an oncoming vehicle refuses to dim its lights at night it is best to:	2	1008		30	-01	-01	-03	NA	04	07	-10	-07
	a. Keep your eyes to the right			96									
	b. Speed up to get by him quickly			01									
	c. Leave your headlights on high beam			03									
635.	After passing an oncoming vehicle that had its bright lights on you should:	1	1072		34	01	01	03	NA	04	-06	-09	-01
	a. Continue at your normal speed			32									
	b. Speed up slightly			03									
	c. Continue at a slower speed for a short time			65									
636.	At night you can tell how fast you are approaching the vehicle in front of you by:	1	1077		31	-01	01	-02	NA	12	00	-13	-08
	a. Looking at your speedometer			15									
	b. Looking at your headlights on the road			06									
	c. Watching the lead vehicle's tail lights			79									
637.	If you are being followed at night by a vehicle with its bright lights on:	2	1005		27	02	03	03	NA	04	-02	-07	-05
	a. Turn your lights off for several seconds			03									
	b. Slow down and permit it to pass you			94									
	c. Speed up slightly and move to the left			03									

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
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639. When driving at dusk or dawn on a dark day:	2	1002		23	-04	-02	-05	NA	04	11	01	-07
a. Turn on your lights on low beam			91									
b. Turn on your parking lights			03									
c. Turn on your lights on high beam			06									
641. In order to see better when passing an oncoming vehicle with its bright lights on:	1	1068		42	00	01	03	NA	09	03	-17	-05
a. Move as close to the oncoming vehicle as possible			20									
b. Keep your headlights on high beam			30									
c. Close one eye as the vehicle gets close			48									
642. When approaching a railroad crossing that does not have a signal on it:	2	998		36	00	00	-05	NA	08	06	-03	-10
a. Stop and look both ways before crossing			37									
b. Slow down and look both ways			62									
c. Continue across at normal speed			01									
643. When approaching a railroad crossing that has signals on it you should:	1	1068		31	00	03	-02	NA	08	07	-13	-09
a. Stop and then continue slowly across			18									
b. Slow down and be prepared to stop			64									
c. Continue at normal speed if the signals are not on			18									
646. If the signal at a railroad crossing does not indicate that a train is coming you should:	1	1072		28	02	01	02	NA	-03	07	-10	05
a. Slow down and look both ways			64									
b. Continue at the same speed and check for a train before crossing			20									
c. Come to a complete stop before continuing across			16									
630. When approaching a narrow bridge or tunnel that has 2 way traffic you should:	1	1080		31	03	04	-03	NA	02	-04	-09	-03
a. Keep to the right			86									
b. Keep going at the same speed			01									
c. Turn on your headlights			13									

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
651. When driving through a tunnel you should: a. Keep your vehicle in low gear b. Use your high beam lights c. Check your speedometer often	1	1075	14 41 44	39	01	03	-01	NA	20	02	-14	-10
655. In order to avoid eye strain during long trips it is best to: a. Keep the vehicle comfortably heated b. Move your eyes across the road regularly c. Shift your eyes from the road to the dashboard often	2	1013	01 86 13	10	01	02	-04	NA	-11	01	00	00
655. Duplicate of above	3	1061	03 82 15	16	01	01	02	01	00	01	-07	03
657. When meeting a vehicle with glaring headlights you should: a. Watch the center line of the road b. Avoid looking at its headlights c. Turn on your bright lights	2	985	26 70 03	31	04	05	-02	NA	11	13	-12	-06
657. Duplicate of above	3	1058	23 70 07	35	-03	-02	09	08	00	14	-18	-06
657. Duplicate of above	5	940	25 66 08	28	NA	NA	NA	NA	03	04	04	00
659. If you get sleepy while driving it is best to: a. Stop for a cup of coffee b. Stop and exercise until you wake up c. Rest or change drivers if possible	2	985	05 04 90	28	-02	-02	-03	NA	04	16	-11	-03

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
661. To reduce the effects of exhaust fumes you should:	2	991		31	01	03	04	NA	07	-05	-07	-01
a. Turn the heater off when it is humid			04									
b. Keep at least 1 window opened			87									
c. Use high-octane gas			09									
662. If after several hours, it becomes difficult to pay attention to your driving:	2	978		44	00	02	-06	NA	34	-03	-10	-15
a. Change your speed regularly			43									
b. Stay close to the right edge of the road			55									
c. Put on the roof light insdie your vehicle			01									
664. If you become tired while driving you should:	1	1080		27	01	01	-02	NA	-07	02	-10	-03
a. Decrease your speed, drive closer to the vehicle ahead, and allow less distance to stop			00									
b. Decrease speed, leave more distance between you and the vehicle ahead and allow more distance to stop			99									
c. Increase speed, leave more distance between you and the vehicle ahead and allow more distance to stop			01									
669. The percent of fatal highway accidents involving a drinking driver is about:	2	997		29	-01	02	02	NA	07	01	-03	-09
a. 50 percent			45									
b. 25 percent			13									
c. 75 percent			42									
673. Having 1 or 2 drinks before driving:	2	1013		35	-04	-02	-02	NA	04	11	-25	-05
a. Will affect reactions and judgment			66									
b. Has little or no effect on driving ability			02									
c. Is illegal			32									
675.N If a driver will be drinking before driving it is _not_ a good idea to:	2	998		40	-02	-01	-01	NA	-05	10	-15	-05
a. Take medicine without asking a doctor			78									
b. Eat before and while drinking			05									
c. Limit his drinks to 1 per hour			16									

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
676.N If a driver has had several drinks in a short period of time he should:	2	998		47	-02	-01	-04	NA	08	16	-20	-10
a. Drive 15-20 MPH slower than the speed limit			01									
b. Wait 1 hour for each drink before driving			85									
c. Drive with someone else in the vehicle to help guide him if necessary			14									
678. Before taking any drugs and then driving it is most important to:	2	1002		24	-03	-02	-03	NA	03	10	-06	-02
a. Know what the effects of the drug are			88									
b. Plan to have some other person with you			12									
c. Have some food in your stomach			00									
680. It is generally safe to drive after taking:	2	997		16	01	03	-04	NA	06	06	02	-06
a. Aspirin			89									
b. Tranquilizers			01									
c. Antibiotics			10									
680. Duplicate of above	3	1061		09	-02	-02	-01	-01	04	05	05	-01
			91									
			01									
			07									
680. Duplicate of above	4	1171		14	-01	-01	-03	-02	04	06	07	-04
			93									
			01									
			05									
682. If you take medicine and then drink alcohol:	2	1008		22	-01	-01	-03	NA	-03	08	00	-02
a. Nothing will happen if you only have 1 or 2 drinks			00									
b. The medicine will not benefit you			00									
c. The effects can make you unfit to drive			100									
689. As you get older your night vision usually:	2	1013		35	-04	-03	02	NA	06	11	-23	-08
a. Stays the same			07									
b. Becomes harder to check			13									
c. Gets worse			80									

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
694. If you are taking medicine for a cold you should: a. Know the effects of the medicine before you drive b. Not drive at night or just after taking the medicine c. Only drive if it is an emergency	2	998	89 06 05	16	00	01	04	NA	-04	-02	-05	-02
697. If you are angry or upset you should: a. Go for a drive in order to forget your problems b. Control your emotions while driving c. "Cool off" before driving	2	998	00 05 94	08	09	08	12	NA	-02	00	00	06
697. Duplicate of above	3	1050	00 06 94	15	-03	-02	-02	-01	-03	05	-03	-01
697. Duplicate of above	4	1168	00 06 94	22	-02	-03	-02	-03	-08	07	-06	05
697. Duplicate of above	5	954	00 04 95	09	NA	NA	NA	NA	-04	-01	01	03
699. When changing a tire you should: a. Be away from the road on a level spot b. Lean the jack toward the vehicle c. Put the vehicle in neutral	2	998	97 01 02	15	-04	-03	-05	NA	11	12	01	-01
713. If your vehicle pulls to one side when the brakes are applied you should: a. Have your brakes checked b. Balance your wheels c. Put more air in the tires on that side	2	1013	85 14 01	29	04	06	-05	NA	30	-11	-03	-16

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
713. Duplicate of above	3	1061	82 15 03	24	-05	-01	-05	-03	31	-11	-06	-21
713. Duplicate of above	5	954	63 29 07	19	NA	NA	NA	NA	19	-20	-20	-26
718. If you are involved in an accident you should: a. Try to move the vehicle out of traffic b. Keep your lights on c. Keep your engine running	2	990	80 20 00	31	-08	-05	-09	NA	06	07	-13	-11
721. To help a seriously injured person after an accident you should: a. Cover him and try to control any bleeding b. Rush him to the hospital c. Move him to a warm place	2	993	95 04 00	27	01	-01	06	NA	-02	07	-08	-04
764. A driver's license: a. Is a right of every resident of a state who meets the age requirements b. Limits you to drive only those types of vehicles specified on the license c. Gives the driver the right to drive only in the state	2	1005	12 85 02	38	-04	-03	-04	NA	08	10	-12	-06
772. When operating a motor vehicle you must carry your: a. Driver's license b. Title c. Proof of age	2	1005	100 00 00	10	01	-01	04	NA	-07	-03	-03	13
776. Your license expires: a. On the last day of your birth month b. 1 year from the date issued c. On your birthday	2	1002	02 00 98	13	01	-01	02	NA	-07	04	-06	00

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
785. The implied consent law means you must submit to a test for alcohol:	2	1002		14	01	01	01	NA	01	-01	-09	01
a. Only if you agree to the test when a police officer requests it			30									
b. If arrested and asked to do so by a police officer			64									
c. When you have been involved in an accident			05									
786. The implied consent law means:	2	998		35	-02	-01	-02	NA	10	02	-10	-08
a. The police may stop you without reason and test whether or not you have been drinking			27									
b. If arrested for drunk driving you must take a breath test if asked to do so			39									
c. If you refuse to take the breath test your license may be revoked			34									
841. You need not obey a traffic control device when:	2	978		18	-03	-03	09	NA	01	01	-09	-03
a. Other vehicles ignore the device			00									
b. No other traffic is present			00									
c. A police officer directs you to do otherwise			100									
851. You should not drive in the left lane if:	2	1005		20	-03	-02	03	NA	-10	08	-14	-04
a. You are going below the speed of other traffic			98									
b. You are turning left			01									
c. There is an obstacle in the right lane			01									
869. When driving on a one-way road:	2	998		36	-04	-03	02	NA	07	11	-20	-12
a. Drive only in the direction indicated by traffic control devices			85									
b. Keep to the right at all times			10									
c. Avoid changing lanes between intersections			05									

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Number and item		Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
					Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
871.	You must drive your vehicle entirely within a single lane and:	2	991		24	-01	00	-04	NA	07	03	-09	-07
	a. Stay 5 MPH or more below the speed limit			02									
	b. Change lanes only after making sure it is safe to do so			90									
	c. Keep your right wheels close to the right lane line			07									
881.	If you and another vehicle reach an intersection at approximately the same time, the vehicle:	2	991		19	03	02	05	NA	-02	05	-10	01
	a. On the left must yield the right-of-way			88									
	b. On the left has the right-of-way			09									
	c. On the larger road has the right-of-way			03									
881.	Duplicate of above	3	1078		30	-02	-03	04	03	-05	06	-13	-01
				89									
				08									
				02									
881	Duplicate of above	4	1170		33	-01	-01	00	-03	-06	05	-08	02
				88									
				09									
				02									
883.	When entering a highway from an alley or private drive you must:	2	978		25	-02	01	03	NA	-01	-01	-12	-04
	a. Drive onto the shoulder of the highway before pulling onto the road			01									
	b. Sound your horn before pulling onto the road			00									
	c. Yield to all approaching vehicles			98									
885.	When an emergency vehicle with siren sounding and red lights flashing is approaching you should:	2	1013		-02	02	00	01	NA	00	00	04	02
	a. Reduce speed and signal the driver to pass			00									
	b. Drive to the right side of the road and stop until the vehicle has passed			100									
	c. Reduce speed and proceed with caution until the vehicle has passed			00									

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
887. If a pedestrian is crossing at an intersection where there are no traffic controls: a. Take the right-of-way but do not strike him b. Yield and give him the right-of-way c. Slow down and proceed with care	2	1013	00 97 03	14	05	04	05	NA	-01	00	-06	00
889. If a vehicle ahead of you has stopped at a crosswalk to let someone walk across: a. Stop, and proceed when safe b. Change lanes and pass c. Blow your horn as you pass	2	985	100 00 00	-01	-02	-02	-01	NA	-04	-03	-00	05
894. When possible, pedestrians walking along the road should walk: a. On the left side facing traffic b. On the right side with traffic c. On the side with the least traffic	2	991	84 13 02	27	04	04	05	NA	07	-10	-10	-04
894. Duplicate of above	3	1061	85 13 02	31	10	13	04	10	07	-08	-08	-10
894. Duplicate of above	4	1171	87 12 01	25	-01	01	-03	-03	11	-13	-06	-09
894. Duplicate of above	5	940	79 17 03	31	NA	NA	NA	NA	03	-08	-11	-06
897. At places where a driveway or alley crosses a sidewalk, the right-of-way belongs to the: a. Vehicle leaving the alley if there are no traffic signs or lights b. Pedestrian on the sidewalk c. Vehicle leaving the alley	2	997	01 99 00	15	02	04	-02	NA	01	03	-01	-04

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Number and item		Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
					Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
898.	When you want to turn right at an intersection you should generally drive:	2	997		12	-02	-03	03	NA	-02	-01	-03	00
	a. Close to the left side of the road			00									
	b. In the left part of the right lane			01									
	c. Close to the right hand side of the road			99									
899.	When making a left turn you should drive:	2	985		36	00	02	05	NA	-04	-02	-23	-01
	a. Wherever the traffic is lightest unless a special left turn lane is available			05									
	b. In the left-most lane used for traffic going in your direction			94									
	c. Several miles above the speed limit so you will not hold up traffic behind you			00									
908.	To legally signal for a turn you must use:	2	1013		34	00	00	05	NA	-09	08	-20	01
	a. Mechanical signals			06									
	b. Both mechanical and hand signals			10									
	c. Either mechanical or hand signals			84									
915.	You should expect school and passenger busses to:	2	1005		35	-05	-04	05	NA	17	-20	-05	-11
	a. Travel 10-15 MPH below posted speed limit			07									
	b. Signal you when it is safe to pass them			07									
	c. Stop at a railroad crossing			86									
916.	When entering a road from a private driveway or alley in a business district:	2	978		25	05	06	06	NA	-01	-05	-06	01
	a. Stop only if you see other vehicles approaching			05									
	b. Stop just before reaching the sidewalk			86									
	c. Drive out slowly while sounding the horn			08									
916.	Duplicate of above	3	1058		30	05	02	08	02	-08	06	-18	-03
				05									
				87									
				07									

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
916. Duplicate of above	5	940	08 80 11	29	NA	NA	NA	NA	-01	-06	-05	-08
918. When approaching a stopped school bus with flashing red lights, you must: a. Slow down to 10 MPH and be on the look out for children b. Wait until the flashing red lights are turned off or the driver signals you to pass c. Stop and then proceed at not more than 10 MPH	2	997	02 88 10	18	-03	-01	07	NA	02	-03	01	-01
919. If a school bus is stopped on the other side of a divided highway you should: a. Stop and wait for the bus to continue b. Move to the lane farthest from the bus c. Continue with caution	2	991	10 01 88	35	01	00	02	NA	02	04	-11	-02
920. You should always travel: a. At the speed of the vehicles in front of you b. At the speed limit c. At a safe and reasonable speed	2	985	00 08 91	35	02	06	08	NA	00	-07	-20	-01
945. You may stop and temporarily leave a vehicle in a traffic lane if: a. You turn the emergency flashers on and leave the engine running b. It breaks down and you cannot move it off the road c. The highway has at least 2 other lanes of traffic going in the same direction	2	1005	06 82 11	33	-03	-02	00	NA	06	04	-09	-04
967. When pulling a house trailer it is illegal to: a. Have people inside when the trailer is being moved b. Use the left lane of a highway c. Pass passenger cars on the highway	2	985	89 08 03	37	02	03	05	NA	10	-04	-04	-03

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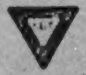
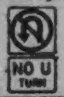
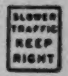
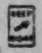
Number and item		Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
					Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
976.	In most situations bicycle riders: a. Have the right-of-way over all other vehicles b. May not travel on a heavily traveled road c. Are subject to the same rules as motor vehicles	2	1008	05 06 89	34	01	01	01	NA	10	04	-09	01
976.	Duplicate of above	3	1058	04 05 90	31	08	08	09	11	-08	-05	-12	01
976.	Duplicate of above	4	1168	07 05 87	35	07	11	11	13	-10	04	-13	-02
976.	Duplicate of above	5	926	07 06 86	37	NA	NA	NA	NA	-08	02	-02	03
978.	Bicycles should generally be ridden: a. On public streets only b. Alongside of another bicycle if available c. On the far right side of the road	2	997	07 00 92	27	-01	00	-03	NA	06	08	-09	-10
1082.	This sign means:  a. Slow down and proceed when the way is clear b. Maintain speed and look both ways c. Proceed as though you have the right-of-way	2	978	99 00 01	24	00	01	07	NA	-05	03	-06	04
1092.N	This sign means you should not:  a. Turn around b. Turn right or left c. Change lanes	2	998	96 03 01	33	01	03	03	NA	-02	12	-17	-04

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
1095. You would most likely see this sign on a: a. 2-lane road b. 4-lane divided highway c. City street	2	1005	96 01 03	22	-01	-01	10	NA	05	-12	00	-02
1096. When you see this sign you may: a. Not pass at any time b. Pass only if the lead vehicle signals that it is okay c. Not pass if visibility is poor	2	1008	99 01 00	31	-06	-06	-07	NA	03	16	-06	-10
1098. You would most likely see this sign on a: a. Multi-lane highway b. 2 lane road c. City parking ramp	2	1013	88 11 01	36	03	07	-02	NA	09	12	-15	-13
1099. When you see this sign you should:  a. Not drive in the right lane if you are driving near the speed limit b. Take the next right exit if you will be driving slower than other traffic c. Keep to the right when driving below the normal speed of traffic	2	985	03 01 96	17	05	09	03	NA	00	01	-03	-03
1102. When you see this sign you should:  a. Watch for side road traffic to the right b. Drive to the right c. Slow down for a right turn	2	993	01 98 01	23	04	05	-05	NA	03	07	-12	-09

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Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
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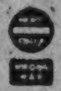
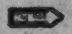
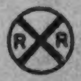
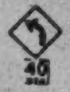
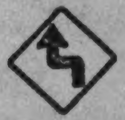
1105.M This sign means:  a. You may not enter this road from your direction b. You are going in the wrong direction c. The road ahead is closed to all traffic	2	991	72 36 01	38	-01	-01	00	NA	01	12	-14	-05
1110. This sign means:  a. Travel only in the direction of the arrow b. Turn right or left ahead c. No U-turns	2	998	100 00 00	11	02	02	-02	NA	00	05	-08	01
1135.M When you see this sign you should:  a. Slow down and be prepared to stop b. Stop until the flagman signals you to cross c. Stop at the nearest rail and look in both directions	2	985	79 04 16	41	-02	03	-03	NA	17	09	-11	-14
1139.M This sign means:  a. Slow down to 40 MPH and prepare to enter a curve b. Exit ahead, exit speed 40 MPH c. Vehicles turning left must reduce speed to 40 MPH	2	998	86 02 12	36	-02	01	-09	NA	02	29	-11	-05
1142.M This sign means:  a. Slow down and prepare to turn to the left and then to the right b. Barricade ahead, prepare to detour c. Road closed ahead, prepare to turn right	2	997	81 19 00	33	01	04	-08	NA	25	11	-09	-16

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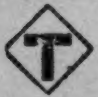
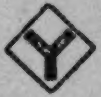
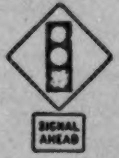
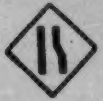
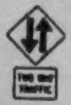
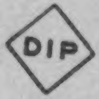
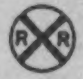
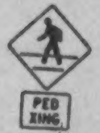
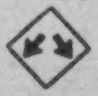
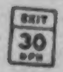
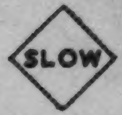
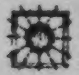
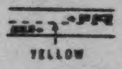
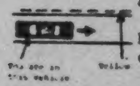
Number and item		Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
					Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
1153. This sign means:		2	1013		42	-04	00	-07	NA	12	23	-20	-17
	a. Road ends, turn to the right or left			77									
	b. Turn around, dead end ahead			05									
	c. Watch for cross traffic before crossing the intersection			18									
1155. This sign means:		2	993		36	00	02	-06	NA	12	06	-17	-10
	a. Slow down and prepare to turn right or left			76									
	b. Prepare to merge with traffic ahead			17									
	c. Prepare to detour			07									
1160.N You are most likely to see this sign before:		2	1002		24	-02	00	-05	NA	05	06	-06	-04
	a. An intersection			85									
	b. A highway exit			09									
	c. A school crossing or bus stop			05									
1164. This sign means:		2	991		19	-04	-04	-04	NA	05	01	-10	-08
	a. Right lane ends, prepare to merge			99									
	b. Slow down, pavement ends			01									
	c. Construction ahead, caution, no shoulder			00									
1179. This sign means:		2	997		46	-01	-01	01	NA	15	11	-16	-14
	a. One way road widens into 2 lanes			25									
	b. Lanes of oncoming traffic are no longer separated			74									
	c. Cross road intersects the main road ahead			01									

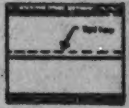
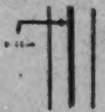
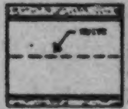
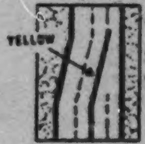
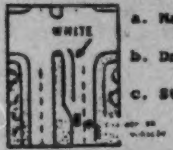
UNIVERSITY OF MICHIGAN H.S.R.I. ITEM STATISTICS

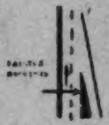
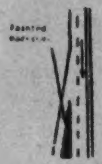
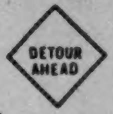
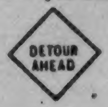
Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
1186. If you see this sign you should:  a. Slow down, low place in the road ahead b. Stop and proceed slowly around the dip c. Continue at normal speed but be prepared for a jolt	2	1002	99 01 00	09	02	03	00	NA	-01	08	-11	03
1195. This sign means:  a. Railroad crossing is controlled -- continue at your regular speed b. Stop at nearest railroad tracks and wait for signal before crossing c. Slow down and watch for trains	2	1005	07 07 86	37	00	04	00	NA	13	01	-13	-09
1199. This sign means:  a. People may cross the road, drive with extra caution b. Pedestrians are not permitted to cross this road c. Pedestrians must yield to vehicles	2	993	99 00 00	14	-02	-01	-04	NA	00	07	-09	-04
1200. This sign means:  a. Obstruction ahead, move to the right or left b. Divided road ahead, keep right c. Road ends ahead, detour	2	985	85 11 03	34	-07	-06	-08	NA	07	09	-19	-09
1205. This sign means you should:  a. Slow down to 30 MPH on this exit b. Go no faster than 30 MPH before leaving the main road c. Expect to go 30 MPH after exiting	2	998	92 05 03	12	03	05	01	NA	-05	07	00	-02

					Item correlation coefficients								
Number	Item	Pilot number	Number of subjects	Response distribution	Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
1205.	Duplicate of above	3	1061	91 06 03	12	00	04	02	08	00	09	-06	-04
1205.	Duplicate of above	4	1171	96 03 01	16	00	-01	-01	-01	-01	07	-04	03
1213.	This sign means:  a. Slow down and drive carefully b. Continue at the same speed but be prepared to stop c. Move to the right lane if you are driving slow	2	998	99 00 01	21	-01	02	-04	NA	-01	12	-11	-07
1224.M	A flashing red signal at an intersection means:  a. Slow down and continue carefully b. Stop and yield to cross traffic c. Continue at normal speed because you have the right-of-way	2	998	04 96 00	34	-04	00	-06	NA	07	13	-13	-05
1225.	A flashing yellow traffic signal at an intersection means: a. Continue at normal speed because you have the right-of-way b. Slow down and continue carefully c. Stop and yield to cross traffic	2	998	01 95 05	26	-01	01	-02	NA	02	15	-13	-08

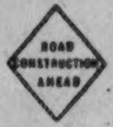
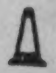
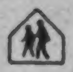
UNIVERSITY OF MICHIGAN H.S.R.I. ITEM STATISTICS

Number and item		Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
					Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
1227.M	This steady yellow traffic signal means:	2	1005		26	-01	01	-08	NA	09	10	-13	-07
	a. Stop before entering the intersection if you can safely do so			82									
	b. Speed up and continue through the intersection before light turns red			03									
	c. Stop immediately; do not continue through the intersection			15									
1232.	If the traffic light over your lane stays red while the lights controlling the oncoming traffic turns green:	2	991		24	-03	-02	-01	NA	02	14	-13	-02
	a. Proceed with caution since your light must not be working			03									
	b. Wait until the light over your lane turns green, then proceed			90									
	c. Wait until the opposing traffic has cleared the intersection			07									
1245.	This center pavement line means:	2	998		32	00	01	03	NA	04	10	-19	-10
	 a. Passing permitted; you may cross the line			85									
	b. Do not cross the line; no passing zone			13									
	c. Cross the line only when making a U-turn			02									
1246.	You should expect this type of center line:	2	1008		41	02	05	-04	NA	13	14	-18	-06
	 a. When it is unsafe for you to pass			78									
	b. When you are permitted to pass			20									
	c. On city streets			02									
1246.	Duplicate of above	3	1058		28	-02	-04	00	02	06	13	-14	-03
				72									
				25									
				03									

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
1247. These center pavement lines on a 2-lane road mean passing is:  a. Not permitted when the solid line is in your lane b. Permitted only when the solid line is on your side c. Not permitted in either direction	2	1008	90 04 05	35	-03	01	-01	NA	09	07	-17	-05
1249. These center pavement lines mean:  a. Pass with care in either direction b. No passing in either direction c. Trucks may not pass; all other vehicles pass with care	2	1005	03 96 00	13	00	02	-01	NA	00	10	-03	-04
1251. This lane line means:  a. You should avoid changing lanes if possible b. You may change lanes c. Keep to the right	2	1008	05 81 14	30	-04	-02	-04	NA	-01	10	-07	-02
1256. These pavement markings mean:  a. You should pass slow-moving vehicles in this area b. Lane ends; merge c. Shoulder ends; do not leave the road	2	998	03 94 03	35	-03	-02	-02	NA	02	08	-09	-01
1257. If you are turning left at this intersection you should:  a. Make the turn from the lane with the least traffic b. Drive in the lane to the right of the white line c. Stay to the left of the white line	2	998	01 04 96	27	06	08	03	NA	00	07	-11	-07

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
1259. These pavement markings mean:  a. Emergency parking area b. Vehicles may not enter marked area c. Vehicles must stop before driving onto the road	2	1013	17 68 14	33	-06	-04	-06	NA	16	05	-13	-05
1260. These markings painted on the pavement at a highway exit mean:  a. You may stop in the painted area to check for directions b. Exiting traffic should enter the exit lane before reaching the painted area c. All non-exiting traffic should keep in the far left lane	2	998	02 79 18	39	00	03	-07	NA	09	10	-16	-10
1278.M You should expect this sign:  a. On the entrance ramp of a highway b. When entering a road construction area c. At the entrance to a dead-end street	2	998	00 98 02	21	-03	-04	-05	NA	03	-01	-07	-07
1279.M When you see this sign you should:  a. Stop and turn around b. Continue with caution and watch for other signs c. Expect to see oncoming traffic in your lane	2	985	03 97 00	31	00	01	00	NA	04	-07	-10	-03

UNIVERSITY OF MICHIGAN H.S.R.I. ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
1294.M When you see this sign you should:  a. Drive on the shoulder for the next 1500 feet b. Use caution and watch for other signs c. Move over to the left lane and maintain your speed	2	991	00 100 00	04	00	02	-01	NA	-02	-01	-03	-03
1299. These orange cones are generally used to:  a. Point out where the exits are located on the road b. Guide traffic through construction areas c. Indicate a detour	2	991	00 93 06	14	-01	-02	06	NA	-05	-11	02	04
1303. When you see this sign you should:  a. Avoid parking in this area b. Slow down and watch out for children c. Be quiet -- School zone	2	985	01 99 00	09	-03	-04	05	NA	-02	03	00	05

APPENDIX B

CALIFORNIA DMV ITEM STATISTICS

This appendix contains the results of an item analysis made on each California DMV item. There are five forms of the class 3 (passenger car and light truck) drivers licensing test, designated DMV Forms 1-5. The January, 1974 version of DMV Forms 1-5 was used. Each form contains 36 items but, because there is a total of only 74 unique items, 48 items are present on more than one test form. More than one set of data was therefore available for the items present on more than one test form. Only one set of data from one test form was selected for analysis, so data was selected from the lowest numbered test form on which each item appeared. Cross-validation of item statistics is presented for each DMV item. The table presenting item statistics is divided into 13 columns, and the data presented is as follows:

1. Number and Item - DMV items from DMV Forms 1-5 were numbered from 1 to 74, and each item is presented as it appeared on DMV test forms. Twelve new sign and law change items created by the California DMV are numbered 75 to 86.

2. Pilot Number - Five pilots were conducted, each utilizing different subjects selected at a different set of field offices. The following is a brief summary of Pilots 1-5. Complete details are available in the full research report.

   Renewal applicants were tested in Pilots 1-4. Original applicants were tested in Pilot 5. California DMV Forms 1-5 were interleaved and administered with new forms in Pilots 1, 3, and 4, and were attached to new forms in Pilot 5. Item results are presented for DMV items appearing on DMV Forms 1-5 only. Results from Pilot 1 are presented, with the results from Pilots 3 and 4 combined presented as a cross-validation. Data is also presented for original applicants tested in Pilot 5. Data is also presented for several new sign items used in Pilot 2, and several new law items used in Pilots 3 and 4. Refer to Appendix C for a list of the items that were placed on each test form.

3. Number of Subjects - the number of subjects that were administered the lowest numbered DMV test form containing each item is presented. Due to missing data for some subjects, item correlations with driver record and biographical data may be based on a slightly smaller number of subjects than the subject number presented. Refer to Table 1 in the Results Section for the number of subjects for whom data was not available for each driving record or biographical variable.

4. Response Distribution - The percentage distribution of subjects responding to each multiple choice answer for each item is presented. The percentage corresponding to the correct answer is underlined. On the average, less than 1% of applicants indicated no answer choice on each item. This, together with rounding error, accounts for some response distribution adding to less than 100.

Item-Correlation Coefficients

All item-correlation coefficients were rounded to two digits, and decimal points were omitted. The number of subjects per DMV item ranged from 926 to 1,355. A correlation that was significantly different than zero therefore, ranged from .053 for a subject number of 1,355 to .064 for a subject number of 926. Because all correlations were rounded to two digits, a correlation of .06 or above in absolute magnitude may be considered significant. Due to rounding, some correlations that failed to reach significance by a small margin may be considered significant, and some correlations that barely reached significance may be considered non-significant.

Approximately a six year prior driving record was analyzed, although driving record was shorter or longer than six years for some applicants. If N/A appears in place of correlation, that correlation was not available. For original applicants (Pilot 5), all item correlations with accidents, accident rate, convictions, and conviction rate were not available because Califiornia driving record prior to testing was used. Conviction rate was not calculated for Pilots 1 and 2.

5. Total Test Score - This is the correlation between correct or incorrect item response and the total number wrong. A positive correlation indicates that subjects who selected the correct answer tended to have higher total test scores than subjects who selected an incorrect answer. These correlations might be slightly inflated, because each item was not removed from the total score for its item-total test score correlation. For Pilots 1, 3, and 4, 36-item DMV Forms 1-5 were used. For Pilot 5, 50-item test forms were used that were made up of 14 HSRI items attached to DMV Forms 1-5.

6-13. Tables in Appendix B are in the same format as tables in Appendix A, and correlations presented in columns 6-13 have the same meaning. The reader is referred to the introduction to Appendix A for definitions of correlations presented in columns 6-13.

CALIFORNIA DMV ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
1. Except where special bicycle lanes are provided, bicycles must be ridden near the edge of the roadway: a. In the opposite direction to auto travel b. In the same direction as auto travel c. In either direction, regardless of auto travel	1	1065	17 81 01	26	07	07	08	NA	-01	-01	-11	00
1. Duplicate of above	3,4	1329	14 84 01	31	03	07	02	04	-05	-07	-11	-05
1. Duplicate of above	5	940	11 88 01	28	NA	NA	NA	NA	-01	06	01	05
2. When you come to a stop sign you should: a. Stop at all times b. Slow down, and stop if necessary c. Stop, unless nothing is coming	1	1065	100 00 00	06	02	02	06	NA	-01	-02	-02	03
2. Duplicate of above	3,4	1329	100 00 00	03	01	01	02	02	-01	-03	02	-02
2. Duplicate of above	5	940	99 01 00	15	NA	NA	NA	NA	-03	-03	01	-04
3. To make a left turn from a two-way street, you should start the turn in the lane closest to the: a. Middle of the street b. Left curb c. Right curb	1	1065	88 11 01	32	02	02	-02	NA	06	07	-10	-03

CALIFORNIA DMV ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
3. Duplicate of above	3,4	1329	89 10 01	34	02	05	03	05	-02	10	-13	-02
3. Duplicate of above	5	940	86 12 02	34	NA	NA	NA	NA	00	05	00	04
4. You may go through a red light without stopping if you are ordered to do so by a: a. Doctor or nurse b. Traffic officer or fireman on duty c. Uniformed soldier or sailor	1	1065	00 100 00	09	-02	-01	-01	NA	-04	01	-06	-03
4. Duplicate of above	3,4	1329	00 99 00	05	-01	-01	-02	-02	00	00	00	-03
4. Duplicate of above	5	940	01 99 00	12	NA	NA	NA	NA	00	-01	-04	-02
5. Driving through a pedestrian safety zone marked by raised buttons or markers is: a. Permitted if zone is not occupied b. Permitted if there is a traffic light control c. Prohibited at all times	1	1065	27 11 61	34	03	06	16	NA	-03	-24	-09	-03
5. Duplicate of above	3,4	1329	25 08 66	29	00	-01	12	10	-04	-17	-03	00

CALIFORNIA DMV ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
5. Duplicate of above	5	940	32 10 57	20	NA	NA	NA	NA	-02	-11	-10	-03
6. When you reach a corner at the same time as another car coming from a cross street, you should yield the right-of-way to: a. The car on your left b. The car on your right c. Neither car	1	1065	08 91 01	32	05	05	02	NA	01	-03	-03	02
6. Duplicate of above	3,4	1329	06 92 01	23	06	05	11	14	-05	-06	-09	-03
6. Duplicate of above	5	940	08 90 01	33	NA	NA	NA	NA	-04	05	-01	00
7. If you are going to turn, the law requires that you give a signal continuously: a. During the last 100 feet b. Only during the last 50 feet c. Only while making the turn	1	1065	89 10 01	30	-01	01	06	NA	-01	-02	-08	-04
7. Duplicate of above	3,4	1329	90 10 01	30	-02	-02	02	02	05	-01	-02	00
7. Duplicate of above	5	940	87 11 02	25	NA	NA	NA	NA	00	-02	01	02

CALIFORNIA DMV ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
8. If you are making a turn on a very bright and sunny day, it is considered safest to: a. Use electric signal only b. Use both electric and hand-and-arm signal c. Sound horn instead of signaling	1	1065	05 95 00	21	-03	-02	02	NA	00	09	-09	00
8. Duplicate of above	3,4	1329	06 93 00	25	-01	00	-05	-04	06	09	-05	-04
8. Duplicate of above	5	940	03 97 01	20	NA	NA	NA	NA	01	08	07	01
9. You may never make a U-turn: a. Across a double line b. On a blind curve c. On a two-lane highway	1	1065	37 58 04	45	-02	04	09	NA	-09	-03	-14	-05
9. Duplicate of above	3,4	1329	31 64 04	41	-01	00	07	10	-11	00	-13	-07
9. Duplicate of above	5	940	32 59 08	38	NA	NA	NA	NA	-04	-03	-11	-01
10. When you come to a corner where there is a flashing yellow light you must: a. Slow down and cross carefully b. Stop before crossing c. Wait for the green light	1	1065	93 06 01	30	-03	-01	02	NA	05	12	-14	-08

CALIFORNIA DMV ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
10. Duplicate of above	3,4	1329	96 03 01	27	-02	03	01	07	00	11	-12	-10
10. Duplicate of above	5	940	95 04 01	22	NA	NA	NA	NA	-02	08	03	-05
11. Under the "basic speed law" you may never drive faster than: a. The posted speed limit b. The flow of traffic c. It is safe	1	1065	33 06 61	49	06	06	09	NA	-06	06	-17	-01
11. Duplicate of above	3,4	1329	29 05 66	48	06	06	13	13	-08	05	-19	00
11. Duplicate of above	5	940	32 05 63	48	NA	NA	NA	NA	02	03	02	11
12. When another car tries to pass you on a two-lane road, you should never: a. Increase your speed b. Maintain your speed c. Slow down	1	1065	89 06 04	46	00	-02	02	NA	-06	15	-23	-02
12. Duplicate of above	3,4	1329	91 05 04	30	00	-02	01	01	-05	17	-15	-03
12. Duplicate of above	5	940	94 03 03	43	NA	NA	NA	NA	00	07	-01	05

CALIFORNIA DMV ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
13. If you get into a rear wheel skid, it is best to: a. Turn your steering wheel away from skid b. Hold your steering wheel straight c. Turn your steering wheel toward skid	1	1065	11 10 78	43	01	02	02	NA	09	02	-14	-06
13. Duplicate of above	3,4	1329	10 09 81	39	-04	-05	02	00	02	01	-16	-03
13. Duplicate of above	5	940	09 09 81	38	NA	NA	NA	NA	07	00	03	00
14. When passing a school while children are going to or coming from school, the speed limit is: a. 35 miles per hour b. 10 miles per hour c. 25 miles per hour	1	1065	00 23 77	33	09	06	10	NA	-06	03	03	-02
14. Duplicate of above	3,4	1329	00 19 80	32	04	-01	10	07	-10	06	-01	07
14. Duplicate of above	5	940	00 23 76	24	NA	NA	NA	NA	-12	12	18	15
15. You are permitted to open your door on the traffic side: a. Only when it is safe b. At all times while parked c. To leave but not to enter your car	1	1065	98 01 01	12	05	04	09	NA	-05	-08	-01	00

CALIFORNIA DMV ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
15. Duplicate of above	3,4	1329	98 01 01	16	00	00	03	04	02	-09	-02	-01
15. Duplicate of above	5	940	95 02 02	24	NA	NA	NA	NA	-01	00	-02	-03
16. You are required to make a financial responsibility report after an accident where damage to one of the vehicles is over $200: a. Whether or not it was your fault b. Only if it was your fault c. Only if you are not insured	1	1065	88 03 09	24	03	-01	13	NA	-02	-08	03	04
16. Duplicate of above	3,4	1329	89 03 09	19	00	-01	02	00	03	-07	-01	-01
16. Duplicate of above	5	940	[illegible]	19	NA	NA	NA	NA	-02	-03	03	-01
17. A special lane in the middle of a two-way street, marked by broken double yellow lines on each side of the lane, may be used: a. For beginning or ending left turns only b. For passing or overtaking other cars c. For making both right and left turns	1	1065	71 17 12	32	03	05	02	NA	06	06	-11	-07
17. Duplicate of above	3,4	1329	75 13 12	42	05	07	00	-01	-01	05	-12	00

CALIFORNIA DMV ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
17. Duplicate of above	5	940	71 16 12	34	NA	NA	NA	NA	03	02	-04	-03
18. If you refuse to submit to a chemical test of the alcohol in your body when you are arrested for drunk driving, your license will be suspended for: a. 6 months b. 90 days c. 30 days	1	1065	69 16 14	26	-02	00	-02	NA	06	02	-04	00
18. Duplicate of above	3,4	1329	69 16 14	28	-02	-02	-06	-07	06	-06	-01	-06
18. Duplicate of above	5	940	67 19 14	19	NA	NA	NA	NA	08	03	01	00
19. When there is a solid double line in the center of the roadway it means that you may not cross the line to: a. Make a left turn b. Enter a private driveway c. Overtake and pass another car	1	1065	11 02 86	40	00	02	06	NA	-04	12	-15	-08
19. Duplicate of above	3,4	1329	07 02 90	31	-02	01	-02	01	03	12	-14	-09
19. Duplicate of above	5	940	09 02 89	32	NA	NA	NA	NA	00	09	01	03

CALIFORNIA DMV ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
20. A flashing red signal light at a road crossing means that you should: a. Stop, before crossing b. Slow down, before crossing c. Wait for the green light	1	1065	98 01 02	15	02	01	01	NA	02	06	-03	-07
20. Duplicate of above	3,4	1329	98 01 01	19	-02	-02	-01	00	03	11	-07	-07
20. Duplicate of above	5	940	94 03 03	25	NA	NA	NA	NA	03	-04	-07	-11
21. The law says that a passenger vehicle may not tow: a. A single trailer b. Another passenger vehicle c. More than one trailer	1	1065	02 07 91	35	-02	-02	04	NA	-02	-03	-04	-04
21. Duplicate of above	3,4	1329	01 04 95	23	01	01	01	00	00	06	-04	-03
21. Duplicate of above	5	940	01 07 91	37	NA	NA	NA	NA	01	-01	-04	-01
22. You may cross over a double line on the road to pass another car if the line on your side is: a. A solid white line b. A broken line c. A solid yellow line	1	1065	02 96 01	14	06	10	01	NA	-05	11	-08	-07

CALIFORNIA DMV ITEM STATISTICS

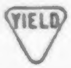
Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
22. Duplicate of above	3,4	1329	02 96 02	25	01	-01	03	00	-05	01	-07	00
22. Duplicate of above	5	940	04 94 02	29	NA	NA	NA	NA	-02	03	01	06
23. You may "double park": a. Not at any time b. When making a delivery c. While waiting for a passenger	1	1065	96 02 01	22	-01	-01	01	NA	-04	03	-05	-03
23. Duplicate of above	3,4	1329	96 03 01	26	04	04	-01	00	-04	06	-14	-05
23. Duplicate of above	5	940	92 04 04	22	NA	NA	NA	NA	-01	01	-01	03
24. When a curb is painted red, it means: a. Limited time parking only b. No stopping or parking c. Reserved for unloading freight	1	1065	01 98 01	20	-02	-02	02	NA	-01	03	-08	-03
24. Duplicate of above	3,4	1329	00 98 01	21	-03	-01	-04	-02	-01	10	-08	-07
24. Duplicate of above	5	940	01 96 02	21	NA	NA	NA	NA	00	-01	-02	03

CALIFORNIA DMV ITEM STATISTICS

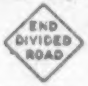
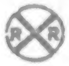
Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
25. When coming to a stop at a corner where there is a stop sign you should stop: a. In back of the crosswalk b. After crossing the crosswalk c. Out far enough to see cross traffic	1	1065	95 00 05	24	05	03	08	NA	03	00	-02	02
25. Duplicate of above	3,4	1329	97 00 03	18	-01	-03	02	00	-06	00	-05	02
25. Duplicate of above	5	940	94 01 05	22	NA	NA	NA	NA	01	03	04	-04
26. When you hear the siren of a closely approaching fire truck, and you are not in an intersection at the time, you should: a. Drive slowly until it has passed b. Speed up to clear traffic c. Pull to the right and stop	1	1065	00 00 100	04	02	01	04	NA	-01	-03	00	-02
26. Duplicate of above	3,4	1329	00 00 99	08	04	03	03	02	-02	03	-01	00
26. Duplicate of above	5	940	01 01 98	20	NA	NA	NA	NA	02	-01	04	-06
27. A pedestrian has the right-of-way at a corner: a. Only when crosswalk is marked b. Whether or not crosswalk is marked c. Only when traffic signals are working	1	1065	07 92 01	27	01	-01	08	NA	-04	-03	-03	-03

CALIFORNIA DMV ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
27. Duplicate of above	3,4	1329	07 91 01	27	01	00	05	05	-01	-02	-01	01
27. Duplicate of above	5	940	10 88 01	33	NA	NA	NA	NA	-01	01	-06	00
28. When a school bus has stopped on the highway ahead of you and is showing flashing red lights, you must: a. Stop until lights stop flashing b. Slow to 10 M.P.H. in passing c. Change lanes and pass cautiously	1	1065	95 02 02	28	06	10	12	NA	-02	-10	-05	-09
28. Duplicate of above	3,4	1329	98 01 01	11	-02	00	05	05	03	-04	-01	-03
28. Duplicate of above	5	940	94 02 04	30	NA	NA	NA	NA	-04	-08	-05	-11
29. You should normally begin a right turn in: a. The lane nearest the road center b. The same lane as for a left turn c. The lane nearest the right curb	1	1065	01 00 98	09	04	04	-01	NA	-01	07	-05	-05
29. Duplicate of above	3,4	1329	02 00 98	06	05	03	01	01	03	-05	-05	-06

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
29. Duplicate of above	5	940	02 00 98	20	NA	NA	NA	NA	01	-02	00	-01
30. You must always give the right-of-way to a pedestrian carrying a white cane because it means that he is: a. Blind b. Crippled c. An elderly person	1	1065	98 01 01	23	-01	-01	09	NA	-01	-04	-11	-09
30. Duplicate of above	3,4	1329	99 00 00	15	03	01	01	01	-09	-04	-03	01
30. Duplicate of above	5	940	98 01 01	27	NA	NA	NA	NA	-02	-01	01	03
31. This sign means:  a. Let cross traffic go by first b. Car on the right goes first c. You have the right-of-way	1	1065	90 09 00	20	06	06	11	NA	04	-04	-05	-01
31. Duplicate of above	3,4	1329	91 09 01	24	-01	-02	05	03	05	-05	-06	-02
31. Duplicate of above	5	940	89 09 02	22	NA	NA	NA	NA	-01	-03	-04	-04

CALIFORNIA DMV ITEM STATISTICS

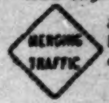
Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
32. This sign means:  a. Road ahead not paved b. Two-way road begins ahead c. Wider road ahead	1	1065	01 90 08	26	04	07	-02	NA	05	-03	-04	-05
32. Duplicate of above	3,4	1329	02 92 06	33	-01	00	04	03	06	-08	-13	-07
32. Duplicate of above	5	940	05 82 12	32	NA	NA	NA	NA	07	-10	-13	-13
33. This sign means: a. Fewer lanes ahead b. Divided highway ahead c. Side road ahead	1	1065	94 04 02	40	07	11	11	NA	00	05	-09	-07
33. Duplicate of above	3,4	1329	95 03 01	35	02	00	02	02	-02	03	-10	-01
33. Duplicate of above	5	940	95 03 01	31	NA	NA	NA	NA	00	04	-02	06
34. This sign means:  a. Rough road ahead b. Roadway crossing c. Railroad crossing	1	1065	01 09 90	14	00	00	03	NA	-01	10	-12	-04

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
34. Duplicate of above	3,4	1329	00 07 92	16	00	01	-04	-03	-01	15	-08	-03
34. Duplicate of above	5	940	01 05 94	23	NA	NA	NA	NA	00	11	04	04
35. A sign which reads "WRONG WAY" means: a. A lane to use when you miss the proper turn-off b. A lane to use for reversing your direction c. Stop. You are going against traffic	1	1065	00 01 99	09	03	02	08	NA	-01	-05	-03	-02
35. Duplicate of above	3,4	1329	01 00 99	15	01	01	01	02	00	03	-03	-01
35. Duplicate of above	5	940	01 01 98	11	NA	NA	NA	NA	03	10	-01	00
36. Disconnecting the smog control device on your car is: a. Forbidden by law b. Permitted during the winter c. Permitted if it affects engine operation	1	1065	99 00 01	24	-03	-02	00	NA	02	06	-06	-10
36. Duplicate of above	3,4	1329	99 00 01	08	03	03	06	05	01	03	02	-02

CALIFORNIA DMV ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
36. Duplicate of above	5	940	98 00 02	19	NA	NA	NA	NA	00	-07	-02	-06
37. If a pedestrian is crossing in the middle of the block, you are required to stop: a. Only if he is in a crosswalk b. Only if he is carrying a white cane c. Whenever necessary for his safety	1	1071	03 01 96	22	12	08	-02	NA	-04	02	-07	-01
37. Duplicate of above	3,4	1355	03 01 96	18	03	01	04	01	-06	-01	-04	02
37. Duplicate of above	5	926	02 02 96	23	NA	NA	NA	NA	-05	-01	-11	-05
38. When driving through fog or rain, it is advisable to: a. Turn on your parking lamps only b. Blink your turn signals regularly c. Turn on your headlights	1	1071	03 01 96	24	02	02	00	NA	00	03	-05	02

CALIFORNIA DMV ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
38. Duplicate of above	3,4	1355	03 01 97	18	02	02	08	04	-01	-01	-05	-03
38. Duplicate of above	5	926	04 01 95	27	NA	NA	NA	NA	-04	-01	01	06
39. Driving with only your parking lamps lighted is: a. Advisable on dark days b. Good practice between sunset and dark c. Forbidden by law	1	1071	05 07 88	40	05	08	09	NA	-02	00	-03	01
39. Duplicate of above	3,4	1355	04 05 91	31	11	10	10	08	-04	-07	01	00
39. Duplicate of above	5	926	07 11 82	34	NA	NA	NA	NA	-06	03	05	15
40. This sign means:  a. Watch for cars entering from side b. Watch for animals emerging ahead c. Divided highway ahead	1	1071	97 01 02	32	09	10	05	NA	-03	09	-08	-01

CALIFORNIA DMV ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
40. Duplicate of above	3,4	1355	98 00 02	23	01	02	-02	00	-01	09	-08	-04
40. Duplicate of above	5	926	98 00 02	29	NA	NA	NA	NA	-03	02	-04	-04
41. An outside rearview mirror is required on the left side of your car: a. In addition to an inside mirror b. Only when towing a trailer c. Only when you do not have an inside mirror	1	1071	89 07 03	22	01	01	06	NA	-09	04	-05	01
41. Duplicate of above	3,4	1355	92 06 02	20	-01	-02	-03	-03	-03	06	-03	05
41. Duplicate of above	5	926	93 05 02	21	NA	NA	NA	NA	-04	01	06	00
42. At night, when a car with bright headlights approaches, making it difficult for you to see, you should: a. Look directly at the oncoming lights b. Close your eyes for a few seconds c. Look toward the right side of the road	1	1071	03 00 97	23	07	07	01	NA	04	08	-06	-04
42. Duplicate of above	3,4	1355	03 00 97	21	02	05	11	08	-01	02	-03	-02

				Item correlation coefficients								
Number and item	Pilot number	Number of subjects	Response distribution	Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
42. Duplicate of above	5	926	02 00 98	27	NA	NA	NA	NA	01	03	-02	02
43. When changing lanes in traffic, you should always give a signal, check your rear-view mirror, and: a. Sound your horn b. Check the area beside your car c. Blink your lights	1	1071	00 92 07	42	03	05	-02	NA	-01	14	-13	-04
43. Duplicate of above	3,4	1355	01 94 05	39	06	08	04	03	-03	12	-18	-05
43. Duplicate of above	5	926	01 95 03	35	NA	NA	NA	NA	04	10	-07	-04
44. A yellow painted curb means that stopping or parking is permitted only for: a. Buses as a loading zone b. Loading or unloading freight or passengers c. Emergency and police vehicles	1	1071	09 88 02	31	00	03	05	NA	-03	-02	07	00
44. Duplicate of above	3,4	1355	11 86 02	30	03	04	02	01	00	-03	-06	01
44. Duplicate of above	5	926	16 76 07	29	NA	NA	NA	NA	-01	01	-05	04

CALIFORNIA DMV ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
45. If you hit a parked car, and are unable to find the owner, the law requires that you: a. Leave a note on or in the car b. Wait for the owner to return c. Leave a message at the nearest house	1	1071	97 03 00	18	05	06	-03	NA	-11	-02	-03	02
45. Duplicate of above	3,4	1355	96 03 00	20	02	04	11	05	-07	-08	-07	06
45. Duplicate of above	5	926	93 07 01	33	NA	NA	NA	NA	-08	06	-02	07
46. When crossing a divided highway, and there is a second stop sign on the divider strip, you should: a. Stop only at the first sign b. Stop at second sign only if cars are coming c. Stop again at the second sign	1	1071	02 02 96	30	09	06	01	NA	-02	02	-09	02
46. Duplicate of above	3,4	1355	01 01 97	31	00	01	02	02	-03	12	-07	00
46. Duplicate of above	5	926	02 01 96	19	NA	NA	NA	NA	-03	-04	-11	-08
47. Persons walking on the highway where there are no sidewalks should: a. Walk on the right side of the road only b. Walk on the side facing oncoming traffic c. Walk on either side	1	1071	10 88 01	18	10	08	01	NA	00	-11	-05	01

CALIFORNIA DMV ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
47. Duplicate of above	3,4	1355	11 88 01	22	02	02	03	05	04	-05	-07	00
47. Duplicate of above	5	926	15 84 01	30	NA	NA	NA	NA	-01	-07	-05	-02
48. At a "blind" intersection, where you cannot see clearly for 100 feet down the cross street in both directions, the speed limit is: a. 15 miles per hour b. 25 miles per hour c. 35 miles per hour	1	1071	90 09 01	30	03	02	10	NA	00	00	-05	00
48. Duplicate of above	3,4	1355	92 07 01	19	04	05	05	04	-02	-07	-04	00
48. Duplicate of above	5	926	88 11 01	21	NA	NA	NA	NA	-11	-06	-06	05
49. Using the unpaved shoulder of the road to pass to the right of a car ahead of you is: a. Permitted if you are turning right b. Forbidden by law c. Permitted if car ahead is turning left	1	1671	02 94 04	35	06	06	03	NA	-02	02	-14	-01
49. Duplicate of above	3,4	1355	02 94 03	27	01	01	01	00	01	02	-03	04

CALIFORNIA DMV ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
49. Duplicate of above	5	926	02 92 06	26	NA	NA	NA	NA	04	-07	-04	-03
50. If your car is not in running condition and is not being used, but is parked on a public street: a. It must be currently registered b. It need not be registered c. It is exempt from registration fees	1	1071	97 01 02	28	04	04	03	NA	-01	-01	-10	03
50. Duplicate of above	3,4	1355	98 00 02	19	04	04	07	03	00	-01	-05	05
50. Duplicate of above	5	926	96 02 02	28	NA	NA	NA	NA	-04	-05	-07	-04
51. It is against the law to have an open bottle of alcoholic beverage in your car, except: a. In the trunk b. On the back seat c. In the glove compartment	1	1071	96 02 02	31	00	02	-03	NA	02	05	-13	-03
51. Duplicate of above	3,4	1355	97 01 01	23	-04	-02	-02	-02	00	07	-09	-06
51. Duplicate of above	5	926	94 02 03	34	NA	NA	NA	NA	00	05	-05	-06

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
52. At night, you must dim or lower your headlight beams when an oncoming car gets within: a. 100 feet b. 500 feet c. 1,000 feet	1	1061	18 75 06	40	00	01	03	NA	07	01	-09	-04
52. Duplicate of above	3,4	1353	16 75 09	32	00	02	-02	01	01	-03	-09	-06
52. Duplicate of above	5	938	20 75 05	33	NA	NA	NA	NA	00	-01	-03	-01
53. You should begin signaling for a right or left turn before reaching the turning point by at least: a. 100 feet b. 200 feet c. 50 feet	1	1061	75 13 12	36	00	-01	07	NA	-08	09	01	06
53. Duplicate of above	3,4	1353	78 14 08	27	01	00	03	03	-06	04	-07	06
53. Duplicate of above	5	938	79 10 11	27	NA	NA	NA	NA	02	08	04	11
54. If you are asked to submit to a chemical test of the alcohol in your body, you may only choose: a. A blood, breath, or urine test b. A blood test c. A breath test	1	1061	64 15 20	36	00	-01	-04	NA	07	03	-08	01

CALIFORNIA DMV ITEM STATISTICS

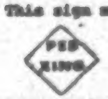
Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
54. Duplicate of above	3,4	1353	67 16 16	33	00	-03	00	-03	01	03	-13	-06
54. Duplicate of above	5	938	69 10 21	29	NA	NA	NA	NA	01	07	05	04
55. Whenever you leave your car unattended, the law requires that you stop the motor and: a. Set the parking brake b. Leave the gears in neutral c. Close the windows	1	1061	97 02 02	36	-06	-07	-03	NA	04	04	-13	-01
55. Duplicate of above	3.4	1353	98 01 01	16	00	00	-05	-03	03	-01	-03	-04
55. Duplicate of above	5	938	96 01 02	17	NA	NA	NA	NA	05	02	-04	00
56. When two cars meet on a grade of a narrow mountain road where they cannot pass, the right-of-way should be yielded to: a. The car going uphill b. Neither car c. The car going downhill	1	1061	71 03 25	40	02	02	07	NA	-05	-01	-08	05
56. Duplicate of above	3,4	1353	73 03 24	37	03	06	10	11	-05	-13	-05	01

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
56. Duplicate of above	5	938	69 04 27	32	NA	NA	NA	NA	-02	-08	-12	-02
57. If a car ahead of you has stopped at a crosswalk to let someone walk across, you should: a. Change lanes and pass b. Blow your horn as you pass c. Stop, and proceed when safe	1	1061	00 00 100	00	00	00	00	NA	00	00	00	00
57. Duplicate of above	3,4	1353	00 00 100	06	-01	-01	-02	-01	-03	04	-06	-03
57. Duplicate of above	5	938	00 00 100	-04	NA	NA	NA	NA	00	-02	00	02
58. When stopping for any reason on the open highway, other than as required by traffic, you should: a. Stop off the pavement b. Stop in the right hand lane c. Stop near the center line	1	1061	97 03 00	18	-01	00	-03	NA	-01	05	-10	-06
58. Duplicate of above	3,4	1353	98 02 00	20	01	04	05	10	-01	01	-05	-01
58. Duplicate of above	5	938	94 05 01	27	NA	NA	NA	NA	02	-04	00	-03

CALIFORNIA DMV ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
59. If a traffic light is red, but a policeman or fireman on duty tells you to go ahead, you should: a. Wait for the green light b. Do as he tells you c. Report him to police headquarters	1	1061	01 99 00	11	-06	-06	-03	NA	-03	06	-08	-06
59. Duplicate of above	3,4	1353	01 99 00	14	-04	-03	-03	-02	01	09	-07	-04
59. Duplicate of above	5	938	03 97 01	25	NA	NA	NA	NA	05	01	-08	-09
60. A green painted curb means that stopping or parking is permitted only for: a. A limited time b. Taxis and buses c. Loading or unloading freight	1	1061	81 05 14	33	00	02	04	NA	-03	-08	-11	-02
60. Duplicate of above	3,4	1353	81 06 13	33	00	07	05	07	-03	-01	-09	-04
60. Duplicate of above	5	938	73 09 17	30	NA	NA	NA	NA	-01	03	-03	05
61. When parking your car headed downhill on a two-way street, the front wheels should be: a. Turned to the left, away from the curb b. Parallel to the curb c. Turned to right, against the curb	1	1061	02 01 96	18	-03	03	01	NA	08	04	-10	-10

CALIFORNIA DMV ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
61. Duplicate of above	3,4	1353	03 01 96	30	-05	-04	-03	-01	18	00	-06	-08
61. Duplicate of above	5	938	06 01 93	30	NA	NA	NA	NA	16	03	-05	-10
62. It is prohibited by law to modify the muffler on your car to: a. Increase noise b. Direct exhaust fumes to the rear c. Render it gas tight	1	1061	85 09 05	41	00	04	-04	NA	08	13	-20	-11
62. Duplicate of above	3,4	1353	88 07 04	33	02	04	-05	00	06	11	-15	-12
62. Duplicate of above	5	938	84 10 05	35	NA	NA	NA	NA	10	-05	-06	-11
63. This sign means:  a. No pedestrians permitted b. Signal-controlled crossing ahead c. Watch for walkers crossing street	1	1061	02 03 95	32	05	08	01	NA	-01	04	-20	-05
63. Duplicate of above	3,4	1353	01 02 97	25	-03	02	01	06	04	05	-08	-04
63. Duplicate of above	5	938	02 04 94	27	NA	NA	NA	NA	-03	-02	-02	-04

CALIFORNIA DMV ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
64. If you are towing a light trailer behind your passenger car, you may not drive faster than: a. 55 M.P.H. b. 45 M.P.H. c. 35 M.P.H.	1	1061	72 23 05	41	02	03	02	NA	08	11	-08	-05
64. Duplicate of above	3,4	1353	78 20 02	34	-04	-03	01	00	08	12	-03	-06
64. Duplicate of above	5	938	72 22 06	37	NA	NA	NA	NA	02	13	07	08
65. When about to make a left turn, you should give right-of-way to cars coming from the opposite direction: a. Until at least two cars have passed b. Which are close enough to be dangerous c. Until five cars have passed	1	1065	05 90 05	38	-03	-02	03	NA	04	11	-21	-04
65. Duplicate of above	3,4	1345	05 91 04	34	-02	-02	04	03	-04	12	-21	-04
65. Duplicate of above	5	954	06 91 03	43	NA	NA	NA	NA	01	-02	-13	-04
66. A good safety rule, when you are sure you have the legal right-of-way, is to: a. Always demand it b. Never insist on it c. Always let the other driver have it	1	1065	02 72 26	38	01	01	08	NA	-03	18	-20	-05

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
66. Duplicate of above	3,4	1345	02 71 27	38	02	03	03	04	-04	14	-17	-03
66. Duplicate of above	5	954	03 80 17	30	NA	NA	NA	NA	-04	09	-08	-03
67. If you are towing a trailer which blocks your view to the rear, the law says you must have: a. A mirror on the left side b. A mirror on the right side c. Mirrors on both left and right sides	1	1065	04 01 95	16	-02	-02	01	NA	02	01	01	02
67. Duplicate of above	3,4	1345	03 01 96	06	02	02	-01	-01	03	09	-05	-03
67. Duplicate of above	5	954	03 01 96	09	NA	NA	NA	NA	-01	-01	-03	-04
68. When a wig-wag or flashing signal is operating at a railroad crossing you must: a. Stop, then proceed when safe b. Slow down before crossing c. Stop only if a train is coming	1	1065	96 01 01	17	05	08	03	NA	03	-01	04	-04
68. Duplicate of above	3,4	1345	99 01 00	09	-01	01	01	01	-02	-01	-04	-03

CALIFORNIA DMV ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
68. Duplicate of above	5	954	96 02 02	21	NA	NA	NA	NA	-01	-01	-02	-03
69. When backing a passenger car out of a parking place, you should always: a. Rely on your rear-view mirror b. Look back over your shoulder c. Blow your horn	1	1065	04 95 01	17	01	03	01	NA	-03	04	-07	01
69. Duplicate of above	3,4	1345	03 96 01	24	-03	-02	00	00	02	02	-07	00
69. Duplicate of above	5	954	03 96 01	22	NA	NA	NA	NA	-02	05	00	-04
70. When pulling out from a parallel parking position at the curb you should: a. Sound horn and then pull out b. Pull out fast to avoid slowing traffic c. Give way to cars coming from behind	1	1061	00 00 99	13	-04	-03	-02	NA	01	02	-06	04
70. Duplicate of above	3,4	1342	01 00 99	17	-01	-02	-02	-02	-03	-01	-07	-03
70. Duplicate of above	5	940	01 01 98	13	NA	NA	NA	NA	-02	02	02	-02

CALIFORNIA DMV ITEM STATISTICS

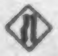
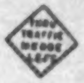
Number and item	Pilot number	Number of subjects	Response distribution	Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
				Item correlation coefficients								
71. Under the "implied consent" law, you are presumed to have given your consent to a chemical test of the alcohol in your body: a. Whenever you use the highway b. Only on advice of an attorney c. Only if an accident has occurred	1	1061	85 02 12	38	-01	02	01	NA	01	07	-19	-03
71. Duplicate of above	3.4	1342	87 02 11	42	08	08	05	08	01	-02	-20	-04
71. Duplicate of above	5	940	82 04 14	43	NA	NA	NA	NA	02	-18	-18	-13
72. Driving under the influence of any drug which affects your safe driving is: a. Permitted if the drug is prescribed by a doctor b. Prohibited under any circumstances c. Permitted if the drug is a diet pill, laxative, or aspirin	1	1061	02 95 02	34	-01	01	05	NA	-05	08	-15	02
72. Duplicate of above	3,4	1342	02 95 02	32	-04	-02	-02	-01	-02	09	-12	-05
72. Duplicate of above	5	940	05 96 02	31	NA	NA	NA	NA	-01	00	-06	-03

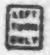
CALIFORNIA DMV ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
73. Driving so slowly as to interfere with the normal or reasonable flow of traffic, except when necessary for safety, is: a. A violation of the law b. The right of any driver c. Legal, but not advisable	1	1061	92 01 06	25	-01	03	-04	NA	04	07	-09	-08
73. Duplicate of above	3,4	1342	92 02 06	29	-02	00	-06	-02	10	07	-06	-12
73. Duplicate of above	5	940	91 02 07	26	NA	NA	NA	NA	01	01	-03	-02
74. Bicycles and motorcycles are entitled to an equal share of the roadway with automobiles: a. On all streets and highways where they are permitted b. Only on roads posted as "bike routes" c. Only when there is no road shoulder	1	1061	90 07 03	33	-02	00	-03	NA	-01	05	-09	-06
74. Duplicate of above	3,4	1342	91 07 01	30	03	06	-01	-01	01	-01	-11	-03
74. Duplicate of above	5	940	88 08 04	24	NA	NA	NA	NA	01	-08	-07	-03

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
75. All pickup trucks must have commercial license plates unless: a. You only drive it to and from work b. You permanently attach a camper to it c. You never carry a load in the cargo area	3	1038	20 35 44	22	05	07	06	07	-02	08	-14	-03
75. Duplicate of above	4	1168	19 35 45	29	01	03	08	02	07	07	-10	-03
76. At a signal controlled intersection a "U" turn is prohibited: a. At all times b. Unless there is a left turn lane c. When a sign says "No U Turn"	3	1038	09 08 82	31	-01	00	02	03	-08	12	-16	-01
76. Duplicate of above	4	1168	12 08 80	34	05	08	03	04	-05	10	-14	-08
77. All vehicles designed for off highway use must be registered with the Department. A driver's license is not required to operate these vehicles: a. At any time b. If driven on private property c. If driven in a State Park	3	1038	22 73 04	38	-03	-02	-01	02	07	08	-17	-08
77. Duplicate of above	4	1168	21 76 02	39	03	02	01	-01	02	08	-18	06

CALIFORNIA DMV ITEM STATISTICS

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients: Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
78. When renewing your driver's license, the Department of Motor Vehicles may require a driving test: a. After considering your driving record b. When there is evidence that your driving ability may be impaired c. Both of the above	3	1058	05 14 81	29	02	04	-01	00	00	15	-19	-08
78. Duplicate of above	4	1168	04 13 83	35	00	-01	-08	-04	05	13	-19	-03
79. On a first conviction of driving under the influence of drugs and causing bodily injury to any person other than yourself, your license will be suspended: a. For one year b. Unless you have liability insurance c. Unless the court orders no suspension	3	1058	57 03 39	15	02	-02	04	00	-05	08	-06	06
79. Duplicate of above	4	1168	55 02 42	23	04	06	02	04	-01	02	-05	00
80. This sign means:  a. Left lane ends, prepare to merge b. Right lane ends, prepare to merge c. The road narrows ahead	2	978	53 02 45	32	-05	-01	-03	NA	07	14	-10	-10
81. This sign means:  a. Right lane exits, through traffic change to left lane b. No right turn allowed c. Stay in the right lane if you are driving a truck	2	997	96 03 01	33	-04	-02	-03	NA	02	19	-13	-10

Number and item	Pilot number	Number of subjects	Response distribution	Item correlation coefficients								
				Total test score	Accidents	Accident rate	Convictions	Conviction rate	Sex	Age	Education	Mileage
82. This sign means:	2	978		27	00	03	03	NA	-01	04	-14	-05
a. Right lane ends, change lanes to the left b. Gravel and dirt road ahead c. Dead end road, prepare to stop			99 00 01									
83. This sign means:	2	976		21	01	06	-01	NA	-01	06	-12	-07
a. Right turns not allowed b. Left turns only c. Wait until signal turns green then turn right			97 01 01									
84. This sign means:	2	978		24	-01	01	-01	NR	-08	09	-21	-04
a. Drive straight through b. Come to complete stop c. Left turns not allowed			01 01 98									
85. This sign means:	2	1008		27	-02	-01	-04	NA	-03	-07	-08	00
a. Prepare to stop, dead end ahead b. Slow down and prepare to turn c. This lane can turn right only			00 02 98									
86. This sign means:	2	991		22	02	02	01	NA	-05	06	-10	-04
 a. Slow down and prepare to turn b. Stop first, then left turn only c. This lane can turn left only			01 05 94									
86. Duplicate of above	4	1076	02 04 94	28	00	02	-01	04	00	15	-19	-10
86. Duplicate of above	4	1168	02 05 93	29	-01	-02	-01	00	-02	11	-16	-04

APPENDIX C

TEST FORM ITEM COMPOSITION FOR PILOTS 1-5

(DMV item numbers are underlined)

	HSRI or DMV item number
PILOT 1	
Test 1........	129,82,130,233,492,222,248,476,242,568,176,641,269,252,520,512,513,525,230,532,623,621,467,535,498
Test 2........	7,25,128,180,626,137,605,469,611,168,135,636,436,237,305,344,379,240,164,603,624,523,516,570,515
Test 3........	114,115,116,365,420,123,643,185,418,394,128,488,200,359,175,423,595,422,156,426,425,574,449,427,187
Test 4........	46,57,66,366,563,103,191,162,105,385,71,608,377,110,451,108,154,192,106,364,384,443,450,383,112
Test 5........	33,38,50,298,586,54,288,264,261,279,53,299,281,494,302,506,288,305,258,300,304,497,591,271,293
Test 6........	36,37,39,66,546,41,266,380,307,260,40,598,278,272,594,67,274,142,64,631,303,588,291,297,262
Test 7........	84,91,166,179,557,178,354,581,358,369,167,396,217,208,223,227,199,429,177,392,211,221,502,205,224
Test 8........	78,82,88,225,414,89,388,226,212,210,90,391,207,151,448,324,333,362,150,374,578,323,326,188,446
Test 9........	51,536,55,178,293,101,244,183,442,529,99,528,206,211,232,235,500,52,103,651,573,533,556,531,193
Test 10........	42,44,92,231,646,98,283,160,507,172,96,496,237,245,470,466,184,633,122,635,629,617,460,186,530
Test 11........	29,31,47,495,519,79,534,562,255,539,48,251,468,263,295,518,250,253,83,252,294,561,517,526,503
Test 12........	30,32,46,170,650,80,352,398,507,544,68,554,548,254,550,178,571,225,85,553,565,540,504,664,471
PILOT 2	
Test 13........	61,87,43,81,124,433,1299,661,894,1105,244,1164,273,871,378,619,919,1294,881,241,564,447,345,551,1232
Test 14........	81,85,83,17,107,337,567,597,662,1082,19,84,143,607,346,472,841,213,592,328,916,218,522,883,296
Test 15........	699,127,163,214,317,552,676,601,675,1139,131,1092,62,477,306,408,277,276,49,74,421,133,190,315,521
Test 16........	28,139,23,55,104,357,1303,657,889,1135,243,1200,351,899,406,659,920,1279,967,197,545,1099,334,372,533
Test 17........	680,978,138,183,311,528,599,600,669,1142,102,82,203,616,353,473,898,1179,618,341,897,8,511,580,918
Test 18........	639,776,101,165,173,482,785,606,678,1186,132,1160,65,367,312,428,319,249,209,45,410,542,181,319,301
Test 19........	87,235,56,136,134,463,945,637,772,1227,220,1095,256,764,373,514,915,1249,851,267,584,1195,360,491,602
Test 20........	673,689,121,169,232,500,885,614,713,1153,147,1098,204,655,361,508,908,1259,625,206,887,531,401,610,99
Test 21........	257,559,83,144,159,478,1256,615,718,1205,196,1110,51,454,215,407,146,1224,35,125,453,193,198,1257,1260
Test 22........	355,439,100,157,171,481,1102,630,721,1199,201,1155,75,393,314,442,321,34,268,189,461,195,308,485,609
Test 23........	119,149,70,141,158,475,1278,642,869,1213,236,1245,95,589,338,465,697,153,560,395,1225,182,694,786,541
Test 24........	20,86,21,18,322,332,575,596,634,1096,6,1246,76,437,325,464,602,155,424,400,1251,487,1247,976,202
PILOT 3	
Test 25........	63,697,516,49,297,30,10,575,392,75,255,533,43,362,306,32,976,185,76,916,494,546,293,92,169,231,14,13,77,78,48,1246,131,195,135,354,78,103,175,312,657,630,358,79,11
Test 26........	252,33,602,1205,6,56,116,50,560,680,75,268,279,37,512,539,200,655,713,540,76,894,257,82,260,578,184,1,565,77,244,237,365,95,451,469,207,502,78,66,621,446,5,500,79
Test 27........	504,598,29,86,436,414,164,81,75,41,561,594,303,120,48,31,584,188,562,76,7,881,21,47,213,586,393,465,318,264,77,98,53,142,280,369,78,17,25,121,209,67,492,79,305
PILOT 4	
Test 28........	697,86,30,575,75,255,31,976,76,185,546,169,77,231,131,195,78,135,358,79
Test 29........	252,33,1205,56,75,540,680,279,76,894,82,184,77,244,207,25,78,502,621,79
Test 30........	63,43,41,594,75,32,188,881,76,7,21,465,77,98,53,280,78,121,209,79
PILOT 5	
Test 31........	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,504,516,297,185,916,894,92,99,48,354,657,502,621,209
Test 32........	14,37,12,11,10,38,2,3,19,20,39,1,31,34,33,40,35,41,36,42,43,44,45,7,22,26,28,46,15,47,48,49,50,21,17,51,533,392,362,116,976,293,184,169,231,131,195,135,103,312
Test 33........	52,6,53,22,23,24,25,26,27,28,29,30,1,2,3,19,17,54,20,55,56,57,36,43,58,21,59,60,61,62,63,40,33,31,35,64,252,29,436,594,56,303,37,540,393,465,98,25,175,358
Test 34........	20,62,2,3,19,44,45,39,65,48,49,66,40,34,33,32,35,64,10,11,12,67,14,15,29,28,26,22,53,6,68,69,38,43,17,18,697,575,41,560,279,713,82,586,578,565,244,365,451,207
Test 35........	3,19,20,62,2,70,68,50,49,48,25,27,24,58,61,55,17,71,47,39,45,44,72,73,21,28,74,6,26,22,31,40,33,63,35,64,598,81,561,188,562,512,121,280,21,369,7,598,492,305

AN ABSTRACT OF

AN EVALUATION OF THE CALIFORNIA DRIVER KNOWLEDGE TEST AND THE UNIVERSITY OF MICHIGAN ITEM POOL

David W. Carpenter
California Department of Motor Vehicles

APRIL 1976

427

In cooperation with the U. S. Department of Transportation, Federal
Highway Administration

SUMMARY

The purpose of this study was to evaluate both the written DMV drivers licensing test, and a large sample of driver knowledge test items selected from the University of Michigan's Highway Safety Research Institute (HSRI) item pool. Test forms were administered to 48,000 California drivers license applicants. The variables analyzed were subject's sex, age, education, annual mileage, and prior six year driving record in relationship to test form and item scores. New test forms were created and were compared to DMV forms.

For each test form, the highest test score correlation obtained was with applicant's education, although education had no relationship to accidents or convictions. For all DMV test forms combined, correlations of total scores with driving record variables were all significant, indicating renewal applicants with better prior driving records obtained higher test scores. Original drivers license applicants scored lower than renewal applicants.

HSRI items and test forms were more related to applicant's biographical variables than were DMV items and test forms. Forms created with HSRI items from the initial HSRI item pool screening were less related to driving record than DMV forms. Final forms, created with items that were the most accident related, were no more or less related to driving record than DMV forms.

INTRODUCTION

The written tests that are currently administered to California drivers license applicants by the Department of Motor Vehicles (DMV) appear to measure knowledge that drivers need to operate a motor vehicle safely. "Original" applicants, those who have never been issued a California drivers license, must pass such a test before they are allowed to drive in California and later, as "renewal" applicants, they must periodically pass a written test as part of their drivers license renewal process.

The DMV publishes a booklet (California Driver's Handbook) that summarizes California's traffic laws, and contains many safe driving tips. The written DMV tests measure knowledge of the material presented in the Driver's Handbook. Applicants who are capable of reading must obtain a passing grade on the written tests before they are issued a new or renewed license. Applicants who fail the written test are allowed to make other attempts to pass. Very few applicants are unable to eventually obtain a passing grade. So DMV tests are primarily educational in nature, and serve to keep drivers current in their knowledge of the information presented in the Vehicle Code Summary.

In several other states, researchers have analyzed the relationship between test scores and driving records to determine if written driver knowledge tests predict accident-involvement. These test validation studies reported low correlations between test scores and driving records. With some forms, drivers who had better records obtained higher scores than drivers with worse records (Creech & Grancy, 1974; Freeburg & Creech, 1971), but the opposite result has also been reported (Wallace & Crancer, 1969). Research has demonstrated that only moderate correlations can theoretically be obtained between any variable or set of variables and driving record (Peck, McBride, & Coppin, 1971). High correlations are needed for accurate individual predictions, or to separate a small group of "accident prone" drivers (Uhlaner &

Drucker, 1965). As a result, some researchers have proposed a new approach for drivers licensing renewal procedures, in which the educational aspects of the testing process are given priority over the attempt to screen out "accident prone" drivers (Miller & Dimling, 1969).

McKnight & Hundt (1972) analyzed the task of driving a motor vehicle to determine those behaviors critical to driving. Based on this analysis, an extensive test question (item) pool for written tests of driver knowledge was created at the University of Michigan's Highway Safety Research Institute (HSRI), as described by Pollock & McDole (1973). This item pool contained a large set of multiple choice test items, many of which tested knowledge of information that was not tested by California DMV written tests. Because this HSRI item pool was based on an analysis of the driving task and had new defensive driving items, it appeared to be a promising source of new accident related content for the DMV tests.

The purpose of this study was to analyze a large sample of the 1,300 test items in the passenger car item pool created at HSRI (Berger, Damkot, McDole, & Pollock, 1973), as well as to analyze DMV tests and test forms. Data was gathered for DMV tests, both to determine the adequacy of DMV test forms and to provide for comparisons between DMV and HSRI items. Following an initial HSRI and DMV item screening, a small set of the "best" items were selected for test forms that will be used in a future DMV testing experiment. A complete item analysis was made on each item tested, and is presented in the full technical report along with a detailed presentation of the research.

METHOD

Five test form pilot studies were conducted in five separate time periods in 1974. The first two were conducted to analyze both DMV items and a sample of about 600 selected HSRI items. New test forms were created with the most accident related DMV and HSRI items, and were administered in the last three pilot studies.

The subjects selected were either applying to renew their current California drivers license, or were original (first-time) California drivers license applicants. All subjects were English reading and were applying for a Class 3 (passenger car or small truck) drivers license.

Due to practical considerations, field offices were not randomly selected and were not a representative sample, but were located in various geographical areas of California. The smallest and largest field offices were not used. Renewal applicants were tested in 28 field offices, and original applicants were tested in 7 field offices.

The various test forms used in each field office were interleaved, and each applicant received only one test form. All tests were untimed, and items were given equal weight in the totol scores. Biographical variables sex, age, education and annual mileage were collected from each subject on a questionnaire that was attached to their test form. All applicants completed their written test in a specially designated testing area in the field office.

A sample of 300 HSRI items was selected, half by two research analysts and half at random from the remaining items in the HSRI item pool. The research analysts selected items that, in their judgment, tested accident related information. Twelve test forms containing 25 items each were created. These forms were administered along with DMV forms. There were five forms of the DMV written tests, each containing 36 multiple choice items. Because there was a total of only 74 unique DMV test items, there was considerable item overlap between the five DMV forms.

A sample of 300 HSRI items that, with few exceptions, were not selected for the preceding 12 test forms were used to create 12 additional test forms containing 25 items each. They were selected by research analysts who attempted to pick items with accident related content.

The approximately 600 HSRI and 74 DMV items that were administered during the first two pilot studies were analyzed, and a subset of 120 of those items were selected for use on final test forms. Only those items with acceptable difficulty and the highest possible correlations with accidents were selected. Eleven final test forms were created from this subset of items, and were administered in the final three pilot studies. Three 45-item forms, three 20-item forms, and five 14-item forms were created. Many HSRI items tested knowledge of facts that were not presented in the Driver's Handbook. No new handbook was created to include new information tested by HSRI items.

Accident and conviction records were those stored in the computer at DMV. For each applicant, approximately a six year prior driving record was selected by a computer program. Driving records were corrected for exposure by dividing the number of accidents and number of convictions by the annual mileage category, giving an accident rate and conviction rate in addition to number of accidents and convictions. Original applicants had no usable prior driving record, so no analysis could be made of the accident relatedness of those test forms administered to original applicants.

RESULTS

Subjects

Table 1 presents the percentage distribution of subjects by biographical data and driving record for renewal applicants and original applicants. Original applicants, those applying for their first California drivers license, tended to be younger, less educated, and reported driving fewer miles in the past year than renewal applicants.

TABLE 1

PERCENTAGE DISTRIBUTION BY SEX, AGE, EDUCATION, ANNUAL MILEAGE, ACCIDENTS, AND CONVICTIONS BY APPLICANT STATUS

Variable	Applicant status	
	Renewal	Original
Number of subjects	43,599	4,698
Sex		
Male	52.27	52.30
Female	47.07	46.86
Unknown	.66	.81
Age		
Under 20	6.17	47.45
20-29	22.25	32.46
30-39	19.41	10.13
40-49	16.28	4.30
50-59	18.06	2.55
60+	17.14	2.13
Unknown	.70	.98
Education		
Grammar school	4.64	1.30
Some high school	13.30	45.25
High school graduate	27.87	18.16
Some college	32.75	18.99
College graduate	20.60	15.16
Unknown	.85	1.15
Annual Mileage		
None	.93	37.80
Under 1,000	6.43	21.80
1,000-4,999	20.72	9.64
5,000-9,999	22.02	8.68
10,000-14,999	23.61	8.75
15,000-19,999	10.30	4.24
20,000-29,999	8.32	3.77
30,000-49,999	3.71	1.49
50,000+	2.39	1.21
Unknown	1.57	2.62
Accidents (six year record)		
0	72.13	N/A
1	21.87	N/A
2	4.66	N/A
3	.98	N/A
4+	.29	N/A
Unknown	.36	N/A
Convictions (six year record)		
0	42.21	N/A
1	25.31	N/A
2	13.37	N/A
3	6.96	N/A
4	4.29	N/A
5	2.59	N/A
6	1.56	N/A
7	1.00	N/A
8+	2.19	N/A
Unknown	.52	N/A

DMV Test Form Results

Test correlations of biographical variables, driving record variables, and DMV test scores from forms that were administered to renewal applicants are presented in Table 2.

A correlation coefficient ranges in value from zero to 1, and can be positive or negative. A correlation of zero means there is no relationship between the variables, so that knowing the value of one variable does not permit any prediction of the other variable. A value of 1 indicates there can be a perfect prediction of one variable from the other. A negative correlation indicates an inverse relationship, meaning high values on one variable are matched with low values on the other variable. A positive correlation indicates high values correspond with high values, and low values correspond with low values between variables. A statistically significant correlation is one that was greater than could be expected by change.

Correlations obtained between scores (number wrong) on DMV test forms and driving record variables, indicated that those applicants with better driving records tended to get fewer items wrong on DMV test forms than those applicants with worse driving records. The highest test score correlation obtained was with subject's education level, although education was not related to accidents or convictions. DMV forms were also significantly correlated with subject's age and annual mileage. Therefore subjects who were younger, more educated, or who reported higher annual mileage got fewer items wrong than their counterparts.

DMV test forms were not equivalent in difficulty across forms. Form 1 was the most difficult, with 19.3% of the renewal applicants obtaining a failing grade and Form 5 was the easiest with only 9.6% obtaining a failing grade. Each DMV form was more difficult for original applicants than for renewal applicants. Overall, 13% of the renewal applicants and 19% of the original applicants obtained failing grades on DMV test forms.

TABLE 2

MATRIX OF CORRELATIONS BETWEEN BIOGRAPHICAL DATA, DRIVING RECORD, AND TEST DATA OF DMV FORMS

(Renewal applicants)

Variable	Variable							
	Sex	Age	Education	Annual mileage	Accidents	Accident rate	Convictions	Conviction rate
Sex................	1.00							
Age................	.01	1.00						
Education..........	-.02	-.24	1.00					
Annual mileage.....	-.35	-.10	.18	1.00				
Accidents..........	-.13	-.09	.00	.11	1.00			
Accident rate......	-.08	-.07	-.04	-.11	.86	1.00		
Convictions........	-.29	-.19	.01	.19	.28	.25	1.00	
Conviction rate....	-.19	-.14	-.04	-.11	.20	.35	.76	1.00
Number wrong.......	.00	.10	-.26	-.08	.04	.06	.10	.12

NOTE: A correlation .02 or greater in absolute magnitude is significant at the .05 level.

HSRI Test Form Results

Test characteristics of DMV forms, initial HSRI forms, and final HSRI forms are presented in Table 3.

TABLE 3

MEAN DRIVER RECORD AND BIOGRAPHICAL DATA CORRELATIONS WITH NUMBER WRONG OF DMV FORMS AND HSRI FORMS

(Renewal applicants)

Variable	Form		
	DMV	Initial HSRI	Final HSRI
Accidents...........	.038**	-.011	.070**
Accident rate......	.062**	.033**	.106**
Convictions.........	.092**	-.015*	.110**
Sex.................	.006	.160**	.100**
Age.................	.098**	.162**	.063**
Education...........	-.268**	-.334**	-.433**
Annual mileage......	-.080**	-.163**	-.187**

$^{*}p < .05$.

$^{**}p < .01$.

Correlations were calculated by averaging the various DMV, initial, or final HSRI test form correlations, so that one measure of test score relatedness to each driving record or biographical variable was obtained for DMV, initial, or final HSRI test forms. Initial HSRI forms were 25-item forms made of items from the first HSRI item pool screening. Final HSRI forms were made from items that had the highest correlations with accidents, and were composed primarily of HSRI items. Data is presented in Table 3 for 45-item final forms. Other final HSRI forms were created, but were subsets of these 45-item forms.

Half of the initial HSRI forms contained items that tested knowledge of specific subject areas, such as stopping only, or turning and steering only. No subject area was consistently more related to driving record than other subject areas.

Several forms contained only items that were randomly selected, and these forms were compared to similar test forms with items that were selected by raters who attempted to select the "best" items. The raters succeeded in creating test forms that were more difficult than forms with randomly selected items, but were no more related to any driving record or biographical variable analyzed.

Final HSRI forms were somewhat more related to driving record variables than were DMV forms, but the difference was no greater than could have been expected by chance. Both DMV and final HSRI forms were more related to driving record variables than were the initial HSRI forms. HSRI forms were generally more related to biographical variables than were DMV forms. For all test forms, the highest correlation obtained was with subject's education level.

Renewal applicants tended to select the correct answer more often than original applicants on both DMV and HSRI items. HSRI items were more difficult than DMV items for both original and renewal applicants.

DISCUSSION

The primary purpose of this study was to evaluate a large sample of HSRI items, because many of those items covered subject areas not tested by California DMV items. Unlike DMV items, HSRI items were based on an analysis of the drivers task and appeared to be a promising source of new accident related content for the DMV written tests. An evaluation of the DMV written tests was needed both to determine the adequacy of DMV test forms and to provide for comparisons between HSRI and DMV items.

Accidents and convictions are not a direct measure of an individual's driving behavior. Further, a driver's knowledge of laws and safe driving practices is but one factor in his driving performance. So it is likely that very weak relationships are all that can be expected between driving knowledge and accidents and convictions on record. For all correlations with driving record, the maximum value attainable for r was not 1, but some lower figure due to the violation of the statistical assumptions for the use of r (Peck, McBride, & Coppin, 1971).

Drivers licensing tests that have been analyzed from other states have shown low magnitude correlations between test scores and driving record variables. But most drivers licensing tests were created to be achievement tests, not to predict driving record. They are used to test knowledge of vehicle registration laws, financial responsibility, and other topics not directly related to the driver's task. Written drivers licensing tests are also used to keep drivers current in their knowledge of laws related to driving. Some tests that have been analyzed in other states had poor measuring characteristics, such as excessively easy test items, and test forms that were not equivalent in difficulty.

DMV Test Forms - DMV forms demonstrated some of the same poor measuring characteristics as were found for written knowledge tests from other states. DMV forms were widely different in difficulty, and had many extremely easy items. With the data made available from this study, poor test items can be identified and corrective measures attempted. A large number of HSRI items have been analyzed and are available for future DMV test form revisions. An item reassignment will be made so that DMV test forms are made equivalent in difficulty.

Because of moderate test form correlations with education, a special burden is placed on renewal applicants who have little education completed and yet are accident-free drivers. Many of these applicants fail and must return to a field office to be retested. It is likely that applicants with little education have difficulty with the language and verbal concepts presented in a written test and this, together with lack of knowledge, is the reason for their high failure rate. Possibly a testing process where nearly all applicants could receive their drivers license in one field office visit, with a traffic safety treatment given after the initial test failure, would be a more efficient use of field office and applicant time.

DMV test form correlations with driving record variables indicated that applicants with better driving records obtained higher test scores than applicants with worse records. Although the driving record correlations were low in magnitude, they were greater than could be expected by chance and were in the proper direction.

Dreyer (1975) presented validation data for original applicants who were administered DMV forms. The results indicated a significant correlation between one year subsequent accidents and test scores, indicating original applicants who obtained higher test scores tended to have better subsequent driving records than those with lower test scores.

Initial HSRI Test Forms - These forms were primarily created to gather data on a large sample of HSRI items, so that the "best" HSRI items could be selected for final test forms. Scores on these forms were more highly related to renewal applicants' sex, age, education, and annual mileage than DMV forms. These initial HSRI forms also tended to be less related to driving record variables than DMV forms.

There was a comparison made between random and rater item selection. Forms with items selected from the HSRI item pool by research analysts were not more highly related to biographical or driving record variables than forms with HSRI items selected at random from the remaining items in the pool. So it appears that the process of screening the lengthy item pool for accident related items, with no validation data to assist such a search, may not be an effective item selection procedure.

Final HSRI Test Forms - The final new test forms used in this study were created for use as treatments in a future DMV testing experiment. The rationale for the item selection and test form construction procedures was the following. If drivers with accidents or convictions on record demonstrate poorer knowledge of particular driving facts and situations, then an effective traffic safety treatment might be to administer test forms covering this information. Items with the maximum possible correlations with accidents were therefore selected for these new test forms.

HSRI and DMV Form Differences - The final forms, which were largely composed of HSRI items, did not significantly differ from DMV forms in correlation with driver record variables, although they were more related to education and annual mileage than could be expected by chance. Overall, the results indicated that forms with HSRI items were more related to applicants' biographical variables than were DMV forms. Whether the final tests are superior traffic safety treatments or driving record predictors remains to be experimentally evaluated. The evaluation must consist of a random assignment of subjects to different testing processes, and a comparison made of subsequent driving records.

There were several differences between HSRI and DMV items that may account for their differences in correlations. The answers to all DMV items and several practice questions are presented in the California Driver's Handbook. DMV tests and test items have been in use for a number of years, and items that are particularly confusing create operational problems and are revised. Most renewal applicants were familiar with DMV tests and Driver's Handbooks but were not familiar with many of the HSRI items, both because these items were new and because no new handbook was created to present the new information. This may partially explain why HSRI items were more difficult than DMV items for all license applicants.

The fact that a Driver's Handbook was available may have reduced the education correlation for renewal applicants who were administered a DMV test, by allowing less educated subjects to study and memorize correct item responses.

It is possible that HSRI items were written in more difficult language or tested conceptually more difficult material that subjects with less education had difficulty comprehending. No readability study was attempted on any items or tests. HSRI items may have been somewhat perplexing to all applicants, but those with greater education were possibly more "test wise" and could more easily select the correct answers and eliminate incorrect answers.

Possibly drivers who have better driving records are more conscientious about reviewing the Driver's Handbook than drivers with worse records, and would demonstrate better knowledge of any type of information that was required knowledge for a drivers license. Therefore, the fact that the handbook was available may have had the effect of increasing the correlation between DMV test scores and driving records.

Original and Renewal Applicant Differences - Original applicants scored lower on DMV forms than renewal applicants, and also found HSRI items on the whole more difficult. Some mention should be made about the purpose of testing for original compared to renewal applicants. The results from this study indicate that renewal applicants had better knowledge of both DMV and HSRI items, even though neither original nor renewal applicants had an opportunity to study the HSRI items beforehand. It may be that the best use of both applicant and field office personnel time would be to reduce the amount of time spent testing renewal applicants, or at lease those renewal applicants who have demonstrated accident-free driving ability. For renewal applicants, a short educational experience may be a more effective traffic safety treatment than a pass-fail test. These possibilities will be explored by the California DMV in an upcoming experiment.

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